

US Army Corps  
of Engineers®

South Pacific Division

# **QUALITY MANAGEMENT PLAN**

## **CESPD R 1110-1-8**

**26 MAY 2000**



US Army Corps  
of Engineers  
South Pacific Division

# **QUALITY MANAGEMENT PLAN**

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REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
**SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS**

333 Market Street, Room 923  
San Francisco, California 94105-2195

CESPD-ET

**25 MAY 2000**

MEMORANDUM FOR

Commander, Albuquerque District  
~~Commander, Los Angeles District~~  
Commander, Sacramento District  
Commander, San Francisco District

SUBJECT: CESPD Regulation 1110-1-8, South Pacific Division Quality Management Plan

1. The third annual update (26 May 2000) of CESPD Regulation Number 1110-1-8, South Pacific Division Quality Management Plan (QMP) has been completed and is available on the CESPD Internet Homepage at <http://www.spd.usace.army.mil>. This regulation provides the general policy and procedures for execution of quality assurance activities in CESPD and of quality control activities in the districts and other field operating activities within CESPD. The QMP is a result of a team effort by the technical elements of the Directorate of Engineering and Technical Services (Planning, Engineering, Real Estate and Construction-Operations Divisions) and of the Directorate of Program Management with input from the various technical elements within your district since the last update of this document.

2. Significant revisions or additions to the QMP include:

a. Recognition that quality management (QM) is an integral part of the Regional Project Management Business Process (RPMBP).

b. Regional training, in part, as quality assurance responsibility of SPD to ensure a qualified regional workforce for development and review of our districts' products.

c. Description of the role of the District Support Teams (DST) at SPD in support of your district's product development process.

d. Description of the Regional Technical Specialist's Program as an important Division-wide resource for product development and review.

e. Expansion of the PM Subplan to include all aspects of the Division's and your district's Program Management responsibilities, including Civil Works Program Development and Management as well as Military Program Management.

CESPD-ET

SUBJECT: CESPD Regulation 1110-1-8, South Pacific Division Quality Management Plan

f. Complete update of the HTRW quality management guidance.

g. CESPD R 1110-2-4, Water Control/Water Quality Management Programmatic Quality Control Plan, is superceded by this version of the QMP.

3. Questions regarding the above or enclosed may be directed to Mr. Ed Sing, CESPD-ET-EW, (415) 977-8117.

Encl

A handwritten signature in black ink, appearing to read "Peter T. Madsen", with a stylized flourish at the end.

PETER T. MADSEN  
Brigadier General, U.S. Army  
Commanding

**DEPARTMENT OF THE ARMY  
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS  
333 Market Street, Room 923  
San Francisco, California 94105-2195**

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CESPD-ET  
CESPD-PM

CESPD Regulation  
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**QUALITY MANAGEMENT PLAN**

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CESPD-ET  
CESPD-PM

CESPD Regulation  
No. 1110-1-8

26 May 2000

## **QUALITY MANAGEMENT PLAN**

### **1. Purpose**

This regulation provides the general policy and procedures for the execution of quality management activities in the South Pacific Division (CESPD), and in the districts and other field operating activities within the South Pacific Division.

### **2. Applicability**

This plan applies to all technical activities of CESPD and its districts having responsibilities for: Civil Works, Military, HTRW, SFO, WFO and Real Estate products and projects from planning of these through their construction, operation and maintenance; and, programs and project management services and subproducts associated with product and project development. The plan shall be reviewed annually and updated as appropriate.

### **3. References**

- 3.1. CECW-A EC 1165-2-203, Technical Policy Compliance Review.
- 3.2. ER 5-1-11, Program and Project Management.
- 3.3. CESPD Regional Project Management Business Process.
- 3.4. Charter for District Support Teams
- 3.5. See subplans in appendices for references applicable to the quality management practices of the individual functional elements.

### **4. Definitions**

- 4.1. *Acronyms.* A list of acronyms used in this plan is given in Appendix B.
- 4.2. *Customer.* The owner, client, local sponsor, user or beneficiary of a service, product or project.
- 4.3. *Contractor.* Other than in-house forces, such as other Corps offices, other government agencies or private contractors.
- 4.4. *Design Checks and Other Internal Review Processes.* Detailed review and checking which must be carried out as routine management practices in each of the respective functional

elements. Such review includes checking basic assumptions and calculations. These checks are performed by staff responsible for the work, such as supervisors and work leaders, and shall be performed prior to conduct of independent technical reviews.

4.5. *Decision Documents.* A decision document is any report prepared for the purpose of obtaining project authorization or modification, commitment of Federal funds for project implementation, and approval to spend/receive funds as a result of entering into agreements with other agencies or organizations including those to obtain Congressional authorization.

4.6. *Engineering Quality Procedures (EQP).* As part of ISO9000, all procedures shall state a purpose, scope, references, definitions, responsibilities, description of process activities, and required records. The procedure identifies who does what, when, and where, and may describe how and why the activity is carried out.

4.7. *Functional Chiefs.* For the purposes of this plan, these are the chiefs of the functional elements within DETS at CESPD (Real Estate, Planning, Engineering and Construction-Operations), as well as Program Management, and their counterparts at the Districts.

4.8. *Implementation Documents.* Any document prepared for purposes of executing a project in accordance with its authorization.

4.9. *Independent Technical Review (ITR).* A review by a qualified person or team, not affiliated with the development of a project/product or the supervision of such, for the purpose of confirming the proper application of clearly established criteria, regulations, laws, codes, principles and professional procedures.

4.10. *Independent Technical Review Team (ITRT).* An interdisciplinary group formed to perform the independent technical review. Same as "Review Team" in this Quality Management Plan.

4.11. *Management System.* What the organization does to manage its processes, or activities.

4.12. *Product.* Any deliverable, either by itself or in combination with other deliverables, that results in a project which is intended to produce a specific expected outcome or solution to a customer problem or need.

4.13. *Product Development Team.* An interdisciplinary group formed to develop a product. For Civil Works projects, it is this team that produces a decision or implementation document.

4.14. *Program.* A group of projects, services or other activities that may be categorized by funding source, customer requirements or other common criteria for which resources are allocated and collectively managed.

4.15. *Program Management.* The component of the Program and Project Management Business Process (PMBP) used by all USACE levels to manage a collection of similar projects, activities and services derived from assigned missions.

4.16. *Program and Project Management Business Process (PMBP)*. The corporate management approach which was established in reference 3.2 for execution of all USACE programs and projects.

4.17. *Project*. Any combination of work (product, services, etc.) intended to produce a specific expected outcome or solution to a customer problem or need. A project has the following characteristics: (1) Requires the application of one or more of the following professional practice and knowledge areas: planning, engineering, construction, operations and maintenance, real estate and environmental science; (2) Is performed by the Corps for a customer, either a specific entity or the Nation as a whole; and, (3) Has a defined scope, schedule, cost and criteria for performance measurement.

4.18. *Project Engineer*. Serves the PM role in the design district when the design district is not the geographic district for the project and the PM is in the geographic district.

4.19. *Project Management*. The component of the PMBP used by USACE for delivering individual projects to our customers.

4.20. *Project Manager*. The project manager is that person who is responsible for overall coordination and development of a project.

4.21. *Quality*. Conformance to properly developed and agreed upon requirements.

4.22. *Quality Assurance (QA)*. Quality assurance is the oversight of the quality control processes to insure their effectiveness in the production of quality products.

4.23. *Quality Control (QC)*. The process employed to ensure the performance of a task that meets the agreed upon requirements of the customer and appropriate laws, regulations, policies and technical criteria on schedule and within budget.

4.24. *Quality Control Certification*. A statement declaring that the quality control process conducted in support of product development has been satisfactorily concluded and that all technical issues that have been raised regarding the product have been resolved.

4.25. *Quality Control Plan (QCP)*. A plan which establishes the documents and products to be reviewed, the review team and its responsibilities, the schedule and costs for reviews, the agreed upon requirements of the customer, and the appropriate laws, regulations, policies and technical criteria for development of the study/product.

4.26. *Quality Management (QM)*. Practices and business procedures to ensure the quality of a technical product, encompassing all aspects of product development, including planning, engineering, real estate, construction-operations and programs and project management.

4.27. *Quality Management Plan (QMP)*. A plan stating the quality management practices and business procedures to ensure the quality of a technical product. It encompasses all aspects of product development, including planning, engineering, real estate, construction-operations and programs and project management.

4.28. *Quality System (QS)*. The organizational structure, procedure, process and resources needed to implement quality management. (ISO 8402)

4.29. *Regional Project Management Business Process (RPMBP)*. The corporate management approach established for execution of all programs, projects and services within CESPD and its districts.

4.30. *Responsible Function Chief*. Functional chief with primary responsibility for the technical quality of a product as defined in function statements and the appendices to this QMP.

4.31. *Review Team*. An interdisciplinary group formed to perform the independent technical review. Same as "Independent Technical Review Team" in this QMP.

4.32. *Review Team Leader*. The individual responsible for coordinating all activities of the review team. Same as Independent Review Team leader in this QMP.

4.33. *Seamless Review*. In-progress reviews made by members of the review team during product preparation.

4.34. *Support for Others (SFO)*. Projects for customers outside of the Department of Defense.

4.35. *Technical Products*. All deliverables are referred to as technical products, including real estate, decision and implementation documents, plans and specifications, and programs and project management documents, such as PCAs, PMPs and PED agreements, that include the integration of technical products from multiple functional elements. They include completed deliverables that are ready for transmission to other members of the product development team, outside of the element that performed the work.

4.36. *Technical Review*. Technical Review focuses on compliance with established policy, principles and procedures using clearly justified and valid assumptions. It includes the verification of assumptions, methods, procedures, and material used in analyses based on the level of complexity of the analysis. It verifies the alternatives evaluated, appropriateness of data used and level of data obtained, functionality of the product and verifies the reasonableness of the results including whether the product meets the customer's needs consistent with law and existing policy and engineering and scientific principles.

4.37. *Total Army Quality (TAQ)*. Similar to TQM (below), the application of quantitative methods and people to meet the needs of end users and to assess and improve all significant processes in the organization.

4.38. *Total Quality Management (TQM)*. The application of quantitative methods and people to meet the needs of end users and to assess and improve all significant processes in the organization.

4.39. *Value Engineering (VE)*. A function oriented, systematic team approach to balance performance and cost. Typical value engineering studies are performed under the direction of an experienced facilitator using a multi-discipline team which breaks down the project into

functional performance elements. Cost and benefits are assigned to each element and evaluated. Creative options are then sought when there is a mismatch between value and cost.

4.40. *Work for Others (WFO)*. Non-traditional projects within the Department of Defense.

## **5. Division Policy on Quality Management**

5.1. The quality management (QM) principles outlined in this quality management plan support the three major goals of the CORPS PLUS Strategy:

5.1.1. Revolutionize Effectiveness: Through sound QM practices, CESPD and its districts will ensure that optimal district performance and customer satisfaction are achieved;

5.1.2. Seek Growth Opportunities: QM ensures that CESPD and its districts will be in a position to meet Army and national needs through a continuous process of enhancing our capabilities; and,

5.1.3. Invest in People: QM also ensures that leadership and a well trained workforce will enhance our value to the Army and to the Nation.

5.2. It is the policy of CESPD and its districts to develop quality systems and implement quality management practices, including quality assurance (QA) and quality control (QC), that ensure that technical products meet the agreed upon requirements of the customer and appropriate laws, policies and technical criteria, on schedule and within budget. Adherence to quality principles and established quality assurance and quality control practices is integral with the roles and responsibilities of all CESPD and district functions. QA and QC practices outlined herein shall also be an integral part of the CESPD Regional Project Management Business Process and be consistent with other quality management practices prescribed by USACE, including Total Quality Management (TQM), Total Army Quality (TAQ), Value Engineering (VE) and ISO 9000. General guidance on QA and QC responsibilities and practices is given below. Exceptions to the general guidance and guidance specific to the unique responsibilities and programs within the Planning, Engineering, Real Estate, Construction-Operations and Programs and Project Management functions are given in Appendices C through G, respectively.

## **6. District Quality Control Responsibilities**

6.1. *Objectives*. Districts shall be responsible for developing quality systems and following quality management practices and business procedures to insure quality products. This includes all interim products that are required for the development of an end product, from the inception of planning through construction-operation. These objectives shall be met by development and execution of Quality Management and Quality Control Plans and associated quality control activities.

6.2. *Execution*. The quality control responsibilities shall be executed consistent with the guidance set forth herein and with each district's Quality Management Plan. Subplans (see appendices) are provided herein describing quality control responsibilities for the products that

are the primary responsibility of the Planning, Engineering, Real Estate, Construction-Operations, and Programs and Project Management functions.

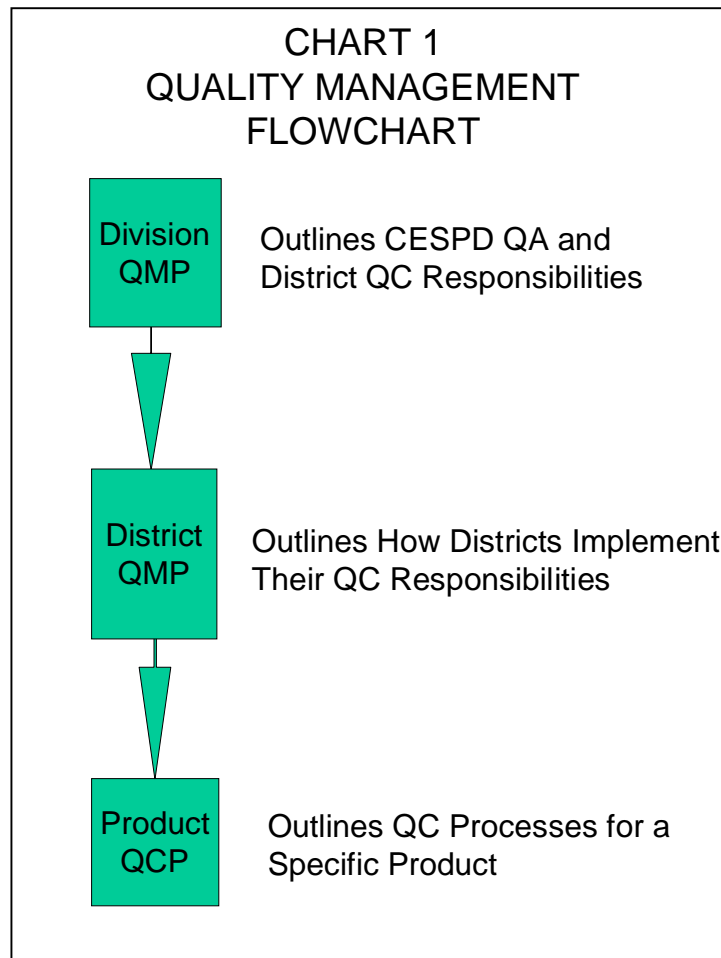
6.3. *District Quality Management Plan (QMP)*. Each district, in a coordinated effort of their Planning, Engineering, Real Estate, Construction-Operations and Programs and Project Management Divisions shall establish, and update annually, an integrated District Quality Management Plan (QMP) that complies with the policy and principles presented in this plan and in applicable USACE regulations. These QMPs and revisions to such shall be reviewed and approved by CESPD. Chart 1 provides an overview of the relationship of the Division and District QMPs.

6.4. *Quality Control Plan (QCP)*.

6.4.1. Requirements for Product Specific QCPs: A quality control plan (QCP) shall be prepared for every product or service, whether obtained

using in-house or contractor forces, updated as warranted and reviewed annually. Contract forces may include other Corps of Engineers offices, other government agencies and private industry sources. The QCP should include, at a minimum, the items listed in paragraph 6.1 of reference 3.1 above, as well as a description of the resources required to accomplish the activities outlined in the QCP. Guidance specific to functional elements may be found in the individual subplans to this QMP.

6.4.2. Requirements for Generic and Programmatic QCPs: Routine or minor products may utilize generic QCPs consistent with overall QA/QC roles. Programmatic QCPs may be developed and utilized for ongoing or continuous programs. Products involving non-routine and/or complex analyses should utilize a product specific QCP. Generic and programmatic QCPs shall include a general description of the items listed in paragraph 6.1 of reference 3.1 above, and shall be updated annually. A one page Supplement to the QCP shall be developed for each product for which a generic or programmatic QCP is used to document the selection of product development and review teams, review schedule and costs and to provide any other needed details. The supplement to the QCP shall be developed and approved within 30 days after initiation of product development and shall be maintained in the product file. A list of products for which a generic or programmatic QCP is used shall be maintained with the QCP.



6.4.3. Responsibilities: A single QCP shall be developed which encompasses the Planning, Engineering, Real Estate, Construction-Operations and Programs and Project Management aspects of a particular product or service. The functional element having primary responsibility for the technical quality of a product shall be responsible for development of the QCP for that product with input from all the other functional elements involved in development of the product. The QCPs should include a requirement for consistency review between the decision or implementation document and any supporting NEPA document(s). Table A-3 of Appendix A provides an overview of QCP requirements for in-house and A-E products.

6.4.4. Review and Approval: The responsibility for review and approval of QCPs is delegated by CESPD to its districts. Monitoring of the development, approval and execution of QCPs remains a CESPD quality assurance responsibility. QCPs, including generic and programmatic QCPs and supplements thereunto, shall be developed and approved by the responsible function chief within 30 days of initiation of product development and within 30 days of the implementation of major revisions. Substantive efforts on product development shall not be undertaken without an approved QCP. Exceptions to the minimum requirements for QCPs set forth herein and reasons for the exceptions must be submitted to the responsible function chief for review and approval. See Appendix A, Table A-1 for a general listing of items requiring QCPs.

#### 6.5. *Quality Control Activities.*

6.5.1. Responsibilities: The chief of each functional element within the district shall have overall responsibility for the technical quality of products as assigned in function statements and the appendices to this QMP. Other function chiefs, the product development team, the project manager, the review team and the review team leader also have significant roles and responsibilities in achieving quality products. These roles and responsibilities shall be described in the district's QMP and shall include the responsibilities that are outlined in each functional element's subplan in the enclosed appendices.

6.5.2. Initial Technical Review Strategy Sessions: The initial technical review strategy session shall form the basis for a quality control plan for all major products. This session shall be held early in the product development phase. The PM shall chair the initial technical review strategy session unless it is combined with another formulation/scoping meeting in which case the initial TRSS would be chaired by the responsible function chief. Also attending would be the functional chiefs and representatives of the customer. CESPD representatives may also attend these sessions in a quality assurance role. In addition to establishing the independent technical review team, the participants shall establish the ITRT leader, level of review, cost and schedule of review, identify documents to be reviewed and identify policy or major technical issues that need to be brought to the attention of CESPD for resolution early in the product development. For products of an uncomplicated or routine nature, the initial technical review strategy session may be waived by the responsible function chief.

6.5.3. Independent Technical Review: Key to the successful execution of the quality control process for the products developed by the Planning, Engineering and Real Estate Divisions and their contractors as well as certain products of Construction-Operations and Programs and Project Management Divisions is the independent technical review of a product. This review

shall be accomplished by an independent technical review team (ITRT) composed of individuals having expertise in and representing all disciplines involved in the type of product being developed and reviewed, who have a minimum of five years experience in the discipline and who were not involved in product development or supervision thereof. Review team members shall be nominated by the function chief(s) of the technical disciplines involved in product development. In addition, independent technical review of a supervisor's work by a subordinate may not be advisable and any proposal for such must be highlighted in the product QCP. Districts are strongly encouraged to identify and use reviewers from outside of their districts as these individuals would bring a fresh, unbiased look at the product development process. Outside sources of reviewers include other Corps offices, Regional Technical Specialists, Centers of Expertise, government agencies and private A-Es. Independent technical review shall not replace the need for and conduct of design checks or supervisory review of products. Sufficient time and resources shall be allocated to this process commensurate with the risk and complexity of the technical product. Review comments should be constructive in nature, relevant to the product and should contain the following elements: (a) A clear statement of the concern; (b) The basis of the concern; (c) The significance of the concern; and, (d) The specific actions needed to resolve the concern. The review documentation shall include a statement that a reviewer has no comments during a product review if such is the case. Responses to comments shall also be documented including the backcheck by the reviewer of responses to the reviewer's comments. Specific guidance on conduct of this quality control element is given in the individual subplans in the appendices to this document.

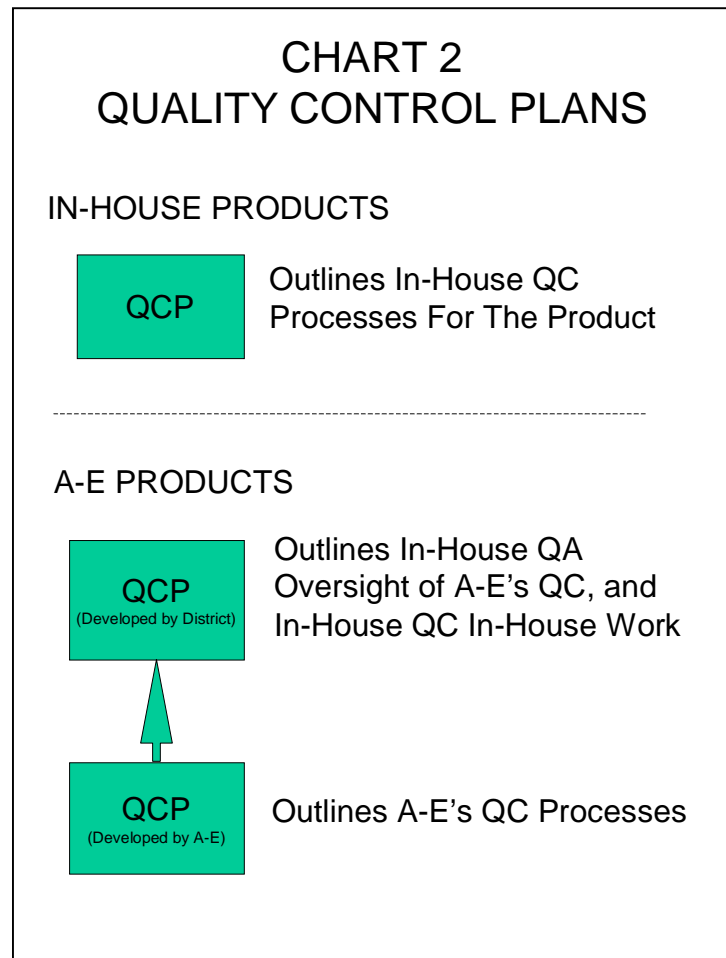
6.5.4. Seamless Review: Subproducts shall be technically overviewed before they are integrated into the overall product. To insure this, product development team members shall consult with their Independent Technical Review Team (ITRT) counterparts at appropriate points throughout the development effort to discuss major assumptions and functional decisions, analytical approaches and significant calculations to preclude significant comments from occurring during the final independent technical review which could adversely impact project schedules and costs. These counterpart discussions should normally be initiated by the subproduct developer. Each discipline shall engage in their own counterpart discussions when appropriate. The conclusions/agreements reached should be documented, with copies retained by each participant and distributed to the ITRT leader and the product development team leader. The documentation shall become part of the product technical review file.

6.5.5. Dispute Resolution: The ITRT leader shall review the products and ITRT comments, product development team responses and backcheck of responses to reviewer's comments to identify any outstanding disagreements between members of the product development team and the ITRT. Any disagreements shall be brought to the attention of the appropriate functional chief to facilitate resolution of technical disagreements between product development and ITRT counterparts. If this interaction does not resolve the issue, the final decision will be made by the responsible functional chief. The functional chief may consult with CESPD staff, who may serve as an unbiased sounding board; or major technical issues may be forwarded to CESPD for resolution.

6.5.6. Technical and Policy Issue Resolution: Issues involving technical and policy interpretation shall be brought to the attention of the chief of the responsible functional element for resolution. In some cases, the chief of the responsible functional element may request that

CESPD hold an issue resolution conference to resolve major policy or technical issues. CESPD may also arrange for HQUSACE participation in the issue resolution conference.

6.5.7. Products Developed by Contractors: Development and execution of a QCP for products developed by a contractor, including architect-engineer (A-E) firms, A-E firms associated with contractors in design-build contracts, other Corps Field Operating Activities and other agencies shall be the responsibility of the contractor. The QCP for the contractor product shall be reviewed and approved by the responsible function chief at the district. In order to maintain contractor responsibility, the contractor shall be responsible for QC of its own work. The District may perform independent technical review of the contractor's work only for special cases when special expertise is required. An overall quality control plan shall be developed by the district that outlines quality control activities by the district for that portion of the product developed by in-house forces and quality assurance activities by the District for overseeing the contractor's quality control activities. The responsible function chief at the district shall review and approve the overall QCP for the total product. Chart 2 illustrates the above requirements.



6.5.8. Final Documentation and QC Certification: Proper documentation is another key component of an effective quality control process. Significant comments, issues and decisions must be recorded and the entire process must leave a clear audit trail. The documentation and certification of the independent technical review and other quality control activities, and where appropriate the District's quality assurance processes prescribed in a product's QCP, shall be made part of the project file and shall be included with the submission of a specific product to CESPD. QC certification requirements are outlined in Table A-3 of Appendix A and are also summarized below.

6.5.8.1. For interim (preliminary) products which the responsible function chief either approves or transmits to CESPD, the responsible function chief shall certify that the quality control process for that product has been completed and that all technical issues that have been identified have been resolved.

6.5.8.2. For final products, which are either approved at the District or by CESPd or headquarters, the responsible function chief shall recommend to the District Commander (DE) that the DE sign the certification. The District Commander's certification shall not be down delegated.

6.5.8.3. A model QC certification for products developed either wholly or partially by in-house forces is provided in Appendix H.

6.5.8.4. For products developed by A-Es or A-E firms associated with design-build contracts, the A-E shall execute an A-E Quality Control Certification (model provided in Appendix H) and provide a copy of this certification to the District. The A-Es independent technical review team leader shall recommend to a principal of the A-E firm that the principal sign the QC certification. The A-E's Quality Control Certification shall be made part of the district's overall quality control certification of the product.

6.5.8.5. For products either partially or wholly developed by A-E forces or A-E forces associated with design-build contracts, the district shall execute a Quality Assurance Certification (model provided in Appendix H). The responsible function chief shall recommend to the District Commander that the DE sign the Quality Assurance Certification. The A-Es Quality Control Certification shall be made part of the district's overall quality assurance certification of the product.

6.5.9. Updating of Quality Control Plans: Quality control plans, product specific, generic and programmatic, whether for in-house or A-E work, shall be reviewed annually and updated as warranted. QCPs shall be updated whenever significant changes require modification of the QCP. Upon identification of a needed change, the revised QCP shall be submitted to the responsible function chief for review and approval within 30 days.

6.5.10. Role of the Project Manager: The project manager is the leader of the product delivery team. One of the project manager's roles is to provide adequate time and resources for the quality management activities associated with a product or service, including but not exclusive to the independent technical review team for the review of products and adequate time and resources to the study team to respond to and resolve quality issues. The RPMBP describes the standard operating procedures for team establishment and the team processes. In accordance with these procedures, the project manager shall negotiate the cost and schedule for members of both the study team and the independent technical review team with the appropriate section chiefs. However, in order to preserve the independence of the technical review, the project manager shall not be a member of the independent technical review team. In addition, to ensure that quality expectations are met in accordance with Reference 3.2, the project manager shall ensure that certification requirements are met prior to approval of the product by the District Commander or transmittal of a product to CESPd.

6.5.11. Quality Management Indicator (QMI) Report: District Commanders shall develop performance based measurement systems keyed to the concepts expressed herein. Program areas to report shall include Civil Works, Military, HTRW, SFO, WFO, Real Estate Services and other significant programs. The QMI report also shall include generic, programmatic and supplemental QCPs as well as QCPs developed for A-E products and A-E products from

design-build contracts. The QMI report shall be presented at each district's CMR. Copies of the QMI report shall be provided to the Director, DETS and Director, PM immediately after the District CMR. To support the data presented in the QMI report, each district shall also provide to CESPD a detailed breakdown by functional area showing specific products requiring QCPs, date of initiation of product development and the date the QCPs were approved. A sample QMI Report is provided in Appendix A. At a minimum, the summarized data for the QMI Reports shall include the following:

6.5.11.1. The total number of projects by program area that require QCPs. This number is obtained by determining the total number of products under development in each respective program in the district and subtracting those that were initiated within 30 days of the QMI Report.

6.5.11.2. The total number of products and percentage of products having an approved QCP. This should be presented by program and as a district wide number and percentage.

6.5.11.3. The date of CESPD approval of the current District Quality Management Plan (QMP) and date of the next scheduled update.

6.6. Use of Checklists: Checklists may be used to guide the technical review and ensure that critical items are not overlooked. Checklists may be used to simplify the documentation of the review. Checklists may also be used to track outstanding action items for a particular study. The use of checklists shall not, however, eliminate the requirement to document specific comments. Sample checklists of items to consider during a review for civil works related products are included in Reference 3.3, Appendix B – Policy Compliance Review Considerations and in the Internal Control Review Checklist for Reference 3.2.

6.7. Lessons Learned. The development of a CESPD-wide lessons learned program is being led by CESPD-ET-E. In the interim, each district should take maximum advantage of lessons learned and share these lessons at appropriate workshops and conferences.

## **7. CESPD Quality Assurance Responsibilities**

7.1. *Objectives.* In accordance with the MSC Quality Assurance focus areas identified by HQUSACE, the South Pacific Division shall be responsible for conduct of quality assurance activities to assure the following:

7.1.1. Mechanisms and procedures are in-place to enable the districts and their contractors to:

7.1.1.1. Produce quality products that comply with established criteria, methods and procedures, and

7.1.1.2. Apply competent technical resources to decisions and reviews.

7.1.2. Districts and their contractors plan, design and construct safe, functional, cost effective and environmentally sustainable products that accomplish authorized purposes and meet or exceed customer's expectations.

7.1.3. The Districts and their contractors develop and execute quality control plans that:

7.1.3.1. Provide a level of detail appropriate to the type, complexity and acceptable level of risk of the product;

7.1.3.2. Are consistent with guidance provided; and

7.1.3.3. Provide for documentation of quality control actions, including reviews, comments and resolution of comments.

7.2. *Execution.* Quality assurance responsibilities shall be executed consistent with CESPD functional statements and are an integral part of the RPMBP. The chief of each functional element within CESPD shall have overall responsibility for quality assurance activities of products within their respective functional elements and missions, and shall be supported in their QA activities by the chiefs and staffs of the other functional elements of CESPD as noted below. Functional elements within CESPD have prepared subplans (see appendices) to execute their quality assurance responsibilities based on their functional statements and reflecting the products that are within their functional area and responsibility. Chart 1, above, provides an overview of quality management processes. CESPD's quality assurance focus areas include:

7.2.1. Focus Area #1: Develop and Maintain the CESPD Quality Management Plan: CESPD has developed this Division's Quality Management Plan, outlining the policies and procedures that all functional areas within CESPD shall follow for their quality assurance activities and that all functional areas within the districts of CESPD shall follow for their quality control responsibilities for in house products and for their quality assurance responsibilities of A-E work. The Division QMP shall be reviewed annually and updated as warranted.

7.2.2. Focus Area #2: Review and Approve District Quality Management Plans: CESPD shall review and approve each district's Quality Management Plan, and annual updates thereof, which shall outline the policies, procedures and responsibilities of all functional areas for producing quality products and services. District QMPs shall be reviewed annually and updated as warranted.

7.2.3. Focus Area #3: Monitor Development and Execution of Product Quality Control Plans : CESPD shall ensure that procedures are in place within each district for the development, review, approval and execution of product specific, generic and programmatic QCPs. The authority for review and approval of QCPs is delegated by CESPD to its districts. CESPD shall ensure compliance with approved QCPs by periodically verifying the independence of independent technical reviews (ITR), resolution of comments, documentation, etc. CESPD shall oversee the district's QA role when the district conducts QA activities for A-E and other contracted products. This also includes oversight of district QA plans for monitoring construction contractor's QCPs.

7.2.4. Focus Area #4: Audit District Quality Processes. CESPD shall review district products as an element of QC Process Evaluation. This includes meeting periodically with districts to review their quality control processes through evaluation of selected products and services at

various stages of development to assure compliance with the Division and District QMPs. Feedback to the district on these quality assessment audits is essential for district process improvement and as feedback to districts for lessons learned processes.

7.2.4.1. General: CESPD shall selectively audit the districts' QC processes, which may include spot-checking specific technical products to assure the quality of the review and the resulting quality of the technical products. These reviews shall be for the purpose of identifying system problems, trends and possible improvements to the quality management and quality control process, serve as feedback to HQUSACE as part of the lessons learned process and assure compliance with current CESPD and HQUSACE policy. The selection of products for detailed audits shall be based on a number of criteria, including: the expressed needs and concerns of the district, new processes or techniques, or product types that have poor performance histories. Audits shall be conducted on an annual basis to assess each district's quality management processes. However, determination of the need for an audit may be made at any time during product development. The audit process may take many forms as discussed in the subplans to this QMP. Audits will be conducted on the quality management of a district's products in compliance with HQUSACE, CESPD and each individual district's quality management guidance and as they support customer satisfaction and the Corps vision:

<i>Align for Success</i>	How does each district implement the quality management guidelines?
<i>Satisfy the Customer</i>	What have been the measures of success in the district's Civil Works and Support for Others programs?
<i>Serve the Army</i>	What have been the measures of success in the district's Military, HTRW and Work for Others programs?

7.2.4.2. Focus of Quality Assurance Audits: The focus of the quality assurance audits shall be on the quality management processes used by the district to assure development of a high quality product whether developed in-house or by an A-E. Review of the quality management processes for selected district products will be used in assessing and rating each district's implementation of the appropriate quality management guidance. In addition, discussions with district personnel shall be part of the audit process to assess the conduct of quality control activities associated with a specific product as well as the successes and needs for improvement of the quality management of the various district programs. Checklists for the audit will be one tool used in assessing and developing the rating for each district's quality management program. Discovery of problems with the district's quality management processes may necessitate obtaining additional information from the district to address CESPD concerns.

7.3. Focus Area #5: Review and Evaluate Performance Indicators. CESPD shall proactively track existing HQUSACE performance indicators and develop and maintain regional indicators as required. This includes the quarterly district Quality Management Indicator report previously described in paragraph 6 above. CESPD also shall identify areas needing command attention

to assure a viable organization that is responsive to USACE customers through quality products.

7.4. Focus Area #6: Continuous Involvement in Product Development. CESPD shall participate in selected project meetings as required by policy guidance and as needed for high visibility and/or complex projects. CESPD shall assist in resolution of policy and/or technical issues and interface with HQUSACE as appropriate, approve deviations from criteria and conduct selected project site visits, as outlined below:

7.4.1.1. In-Progress Conferences: In-Progress Conferences shall serve as formal quality assurance checkpoints to ensure that quality control has taken place and that appropriate progress, particularly in prolonged product development efforts, is being made in the product development. CESPD participation in these conferences shall be a significant element of CESPD's quality assurance program. Requirements for such conferences are included in the subplans for the various functional elements.

7.4.1.2. Technical and Policy Issue Resolution Conferences (IRC): Issue Resolution Conferences (IRC) may be required during product development. These may be called at the request of: A district to address major issues raised as a result of quality control activities; CESPD, to address major issues raised as a result of quality assurance activities; and, mandatory issue resolution conferences under the respective functional element's umbrella of responsibility. All issue resolution conferences shall be chaired by CESPD.

7.4.1.3. Counterpart Consultations: An essential quality assurance activity shall be informal, counterpart consultations between district and CESPD personnel. These consultations shall be informational "two-way streets", providing CESPD personnel an opportunity to assess whether district and/or contractor activities for product development are in compliance with the established quality control plan and providing district personnel with an informal avenue to CESPD personnel on resolution of unique technical problems and/or issues on product development.

7.4.2. Focus Area #7: Partner, Coordinate and Mentor with District. CESPD shall provide for continuous dialog and interactions with counterparts to keep them informed of upcoming work, training, new regulations, etc. CESPD shall also develop and implement regional guidance, regional training, share lessons learned and facilitate changes in criteria, facilitate partnering and sharing of resources across districts and evaluate district technical capabilities and needs. Quality assurance also includes an evaluation of the district's development and maintenance of the technical competency for production and review of a product.

7.4.2.1. If production and/or review team members with the appropriate technical expertise in a specialty area are not available from within the district, the district must seek such expertise from outside sources, such as other districts, divisions, COE laboratories, Regional Technical Specialists (see below), customer's organizations or private consultants. At the request of the districts, CESPD may provide assistance on seeking such expertise. The approval of a quality control plan for a product shall be the acknowledgement of the credentials of the production and technical review team. To assist in this process, the quality control plan shall include the

technical qualifications of the technical review team, to include the number of years of relevant experience.

7.4.2.2. CESPD shall aid in fostering the technical competency of its Districts through partnering sessions, encouraging the professional development of its staff through training, participation in professional societies and conferences, etc. In addition, CESPD staff are available to provide training on the quality management guidelines and procedures outlined herein.

7.4.2.3. To facilitate identification of personnel with unique technical expertise, membership in and use of the CESPD Skills Inventory and Experts Registry is encouraged.

7.4.2.4. Regional Technical Specialists. The Engineer and Scientist Career Program Planning Board, in May 1997, directed that a strong career ladder for technical disciplines is essential to maintaining CESPD core competencies. With districts being fully responsible for the technical adequacy of products, the establishment of enhanced non-supervisory technical specialist positions at the district level was imperative and a division-wide advisory panel was established. Technical specialist positions are regional in nature, including the workload of the home district as well as the workload of the entire Division. A minimum of 30% of a regional technical specialist position is as a CESPD regional expert, which would include: serving as an independent technical reviewer for other districts, trouble shooting for other districts, or representing the entire Division at meetings and conferences. The other 70% of the position would be directed specifically at the home district's technical requirements. A listing of the technical specialist positions is included on the CESPD homepage.

7.4.3. Focus Area #8: Approve/Certify Programming Activities. CESPD shall ensure coordination of all programming activities with HQUSACE and districts. Detailed descriptions of this responsibility will be provided in separate guidance on the CESPD function of program management.

7.4.4. Focus Area #9: Conduct and Provide Feedback on Command and Staff Inspections. CESPD shall examine mission execution, level of training, FTE resources, workload, compliance with standards and regulations and obtain feedback on morale, welfare, discipline and problems / needs through command inspection visits. The command inspection program shall ensure that district personnel are aware of and comply with all requirements in this quality management plan and in each district's quality management plan in support of the RPMBP. Compliance by the districts and their contractors with this plan shall be discussed during these visits as well as any required corrective actions required to ensure compliance. These visits shall also serve to surface required modifications to the district's quality management plans, product specific, generic and programmatic quality control plans and to this CESPD quality management plan. If a given annual Command Inspection Visit is not focused on quality management, a separate visit shall be conducted for this purpose.

7.5. *District Support Teams.* District Support Teams were chartered by Reference 3.4 to support the districts in the execution of their programs. They are tasked to provide maximum support to the districts in delivering projects to its customers. In the context of quality management, this would include providing oversight and quality assurance of the district's overall quality management program, assisting the districts on project specific issues,

performing policy reviews for delegated actions, processing district products through CESPD, HQUSACE and ASA (CW), performing quality assurance audits as well as the full range of quality assurance activities as outlined above. The District Support Teams include members from Planning, Engineering, Construction-Operations, Real Estate and Counsel. The coordination among the members of the District Support Teams is described in Reference 3.4.

7.6. Participation of an individual from CESPD on a product's independent technical review team would compromise that individual's ability to perform quality assurance on that product and is prohibited. CESPD team members not involved in quality assurance activity on a specific technical product may, at the request of a district and with the approval of the Director of DETS or the Director of PM, participate in the technical review of that product. In this situation, the requesting District would be required to fund this review activity.

7.7. Delegated Responsibilities of CESPD: Approval authority for a number of programs has been delegated to CESPD. In addition to quality assurance responsibilities for technical review, CESPD has quality control responsibilities for policy compliance of delegated authorities. In that regard, CESPD is responsible for policy compliance review of products that are approved by the Division Commander. HQUSACE will provide policy QA of programs/documents delegated to CESPD. Procedures for CESPD policy compliance review of all decision documents for delegated programs are addressed within the appropriate subplan. See Appendix A, Table A-2 for list of delegated responsibilities.



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8 Appendices  
APP A - Tables  
APP B - Acronyms  
APP C - Planning Subplan  
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APP E - Real Estate Subplan  
APP F - Construction - Operations Subplan  
APP G - Programs Management Subplan  
APP H - Model Quality Control Certification

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## Appendix A Tables

**TABLE A-1  
QCP REQUIREMENTS**

The following is a list of projects/products produced in the Civil Works, MILCON and HTRW Programs and is not necessarily all-inclusive. Next to each product is the suggested QCP type for that product. However, the QCP type used for an actual product must be tailored to the unique characteristics of the product and may differ from the suggestions on this list. All technical products shall require use of a QCP (individual, generic or programmatic), except those indicated as NR (NR = QCP not required). Districts may wish to develop an individual QCP in lieu of using a generic or programmatic QCP for the requirements of products not covered under the latter plans. Specific details of QCP submittal requirements are addressed in the main body and subplans of the QMP.

<b>TABLE A-1 QCP REQUIREMENTS</b>		
DOCUMENT TYPE	INDIVIDUAL	GENERIC/ PROGRAMMATIC
<b>DECISION DOCUMENTS</b>		
General Investigations - Reconnaissance Report	X	
General Investigations - Expedited Reconnaissance Rpt		X
General Investigations - Feasibility Report	W/I PSP	
General Reevaluation Report	W/I PSP	
Limited Reevaluation Report	X	
Post Authorization Change Report	X	
Major Rehabilitation Evaluation Report	X	
Dam Safety Evaluation Report	X	
Dredged Material Management Plan	X	
Section 933 - Beneficial Use of Dredged Material	X	
Section 934 - Extension to Existing Shoreline Protection Project	X	
PL 84 - 99 Rehabilitation Report		X
Cost Allocation Report	X	
Real Estate Design Memorandum (REDM)	X	
<b>IMPLEMENTATION DOCUMENTS</b>		
Design Documentation Report (DDR)	W/I PMP	
Feature Design Memorandum	W/I PMP	
Plans & Specifications - Civil Works < \$ 500,000		X
Plans & Specifications - Civil Works > \$ 500,000	X	
Plans & Specifications - MILCON < \$ 1,000,000		X
Plans & Specifications - MILCON > \$ 1,000,000	X	
HTRW < \$ 2,000,000		X

<b>TABLE A-1 QCP REQUIREMENTS</b>		
DOCUMENT TYPE	INDIVIDUAL	GENERIC/ PROGRAMMATIC
HTRW > \$ 2,000,000	X	
Hydrologic & Hydraulic Studies (Non-project Specific) < \$ 150,000		X
Design Analysis Report	X	
Water Control Plans and Manuals		X
<b>CONTINUING AUTHORITIES PROGRAM</b>		
Section 14 Planning and Design Analysis		X
Sections 103, 107 and 111 DPR		X
Section 204 Initial Appraisal		X
Section 204, 205 and 208 DPR		X
Section 1135 PRP		X
Section 1135 ERR		X
<b>OTHER DOCUMENTS</b>		
Planning Assistance to State Report		X
Floodplain Management Study Report		X
Environmental Assessment/FONSI	X	
EIS (Standalone)	X	
PM Products (PMPs, PED Agreements, MOUs, MOAs, etc.)		X

**TABLE A-2**  
**APPROVAL AUTHORITIES DELEGATED TO CESPD**

Approval authority for the following programs and/or documents resides within CESPD. In some cases, approval authority has been delegated to the Districts, but the policy review and quality assurance role remains in CESPD. Delegated approval authority for a particular activity or project may be rescinded by HQUSACE at their discretion. The most current regulation for the particular program/activity should be referred to for additional details. The following table lists documents in this category but it should not be considered all-inclusive:

DOCUMENT TYPE	NOTES:
<b>DECISION DOCUMENTS:</b>	
PL 84-99 Rehabilitation Reports	
Dredged Material Management Plans	
<b>IMPLEMENTATION DOCUMENTS:</b>	
Continuing Authorities Program (CAP) Design Analysis Reports: (Section 14, 103, 107, 111, 205, 208)	Per 16 Jun 95 HQUSACE guidance, primarily all actions are delegated to Division. See EC 1105-2-211 for details.
Section 1135 PRP and PMR	See details in EC 1105-2-206.
Section 204, Initial Appraisal and DPR	See dollar limitations in EC 1105-2-209.
Water Control Plans, Manuals, and Deviations	Per ER 1110-2-1400 dated 30 Sep 93, Para 6.
<b>OTHER DOCUMENTS:</b>	
Section 22, Planning Assistance to States	
Floodplain Management Services Study Reports	
Project Cooperation Agreements	If consistent with models.
PED Agreements	If consistent with models.
<b>O&amp;M REPORTS:</b>	
Water Quality Management Plans	
O&M Manuals	
Master Plan and Amendments	

<b>TABLE A-3</b> <b>QUALITY CONTROL</b> <b>CERTIFICATION REQUIREMENTS<sup>1/</sup></b>		
ITEM	CERTIFICATION BY	
	DISTRICT COMMANDER	RESPONSIBLE FUNCTION CHIEF <sup>3/</sup>
Products Approved by CESPD or HQ	X	
Products Approved by District	Varies By Program	
Interim (Milestone and Draft Products)		X
<b>Planning Products:</b>		
Products Approved by CESPD or HQ	X	
Decision Documents (Draft to HQ) <sup>6/</sup>		X
Decision Documents (Final) <sup>6/</sup>	X	
Final EIS (Standalone)	X	
CAP Reports (> \$6 million)	X	
CAP Reports (< \$6 million)		X
Sec 22 PAS Reports		X
FPMS Reports		X
Interim (Milestone) Products		<sup>4/</sup>
Expedited Reconn (905b Rpt and PSP)		X
<b>Engineering Products:</b>		
Products Approved by CESPD or HQ	X	
Design Documentation Reports	X	
PL 84-99 Rehabilitation Rpts	X	
Products Approved by District	X	
Water Control Manuals		X

<b>TABLE A-3</b> <b>QUALITY CONTROL</b> <b>CERTIFICATION REQUIREMENTS<sup>1/</sup></b>		
ITEM	CERTIFICATION BY	
	DISTRICT COMMANDER	RESPONSIBLE FUNCTION CHIEF <sup>3/</sup>
O&M Manuals	X	
Dam Safety & Related Reports	X	
HTRW Projects >\$ 2 million	X	
HTRW Proj < \$2 mil (Generic QCP)		X
CW P&S < \$500k (Generic QCP)		X
MIL P&S < \$1 mil (Generic QCP)		X
H&H Studies (Generic QCP)		X
DD1391 Forms		5/
Interim (Milestone and Draft) Products		4/
<b>PM Products:</b>		
PM Products (PCAs,PED Agreements, etc.)		2/
NOTES: 1/ - See Main Body and Individual Subplans of QMP for specific requirements. 2/ - Single Reviewer experienced in development of this product; Responsible Function Chief Acertifies≡ either in transmittal letter to higher authority or in memo placed in project file. 3/ - Responsible Function Chief normally will be a Division Chief at the District. 4/ - ITRT Leader ensures that all comments are resolved in a timely manner after the respective milestone 5/ - SPD has final QC responsibility for these products 6/ - Includes Decision Documents developed after Project Authorization		

<b>TABLE A-4</b> <b>SAMPLE DISTRICT CMR - QMI REPORT</b>		
<b>QMI REPORT FOR SPX DISTRICT (FY98 - 4TH QTR) 28-Apr-00</b>		
<b>TECHNICAL ELEMENT</b>	<b>HOW MANY REQUIRE QCP</b>	<b>HOW MANY WITH APPROVED QCP</b>
<b>ENGINEERING</b>		
Dam Safety Evaluation		
Reports	3	2
Design Memorandums	8	8
P & S - CW	12	7
P & S - Mil and SFO	23	0
HTRW	12	0
Generic QCP	6	3
<b>ENGINEERING SUBTOTAL</b>	<b>64</b>	<b>20</b>
Percentage		31%
<b>CONSTRUCTION -OPERATIONS</b>		
Regulatory	1	1
Construction QAPs	75	75
<b>CON-OPS SUBTOTAL</b>	<b>76</b>	<b>76</b>
Percentage		100%
<b>PLANNING</b>		
Feasibility	8	7
Reconnaissance	13	10
Special Study	2	1
Planning Assistance	0	0
Ecosystem Restor Report	8	4
<b>PLANNING SUBTOTAL</b>	<b>31</b>	<b>22</b>
Percentage		71%
<b>REAL ESTATE</b>	4	4
<b>REAL ESTATE SUBTOTAL</b>	<b>4</b>	<b>4</b>
Percentage		100%
<b>DISTRICT TOTAL</b>	<b>175</b>	<b>122</b>
Percentage		70%

Current District QMP approved Oct99\*; next update scheduled for Oct00.

**Appendix B ACRONYMS**

A-E	Architect-Engineer
AFB	Alternative Formulation Briefing
ASA(CW)	Assistant Secretary of the Army (Civil Works)
ARMS	Automated Review Management System
BCOE	Biddability, Constructability, Operability and Environmental
BRAC	Base Realignment and Closure
CAP	Continuing Authorities Project
CECG	Corps of Engineers, Commander and Chief of Engineers
CECW-A	Corps of Engineers, Civil Works, Policy Division
CERE-A	Corps of Engineers, Real Estate Directorate, Acquisition Branch
COE	Corps of Engineers
CESPD	South Pacific Division, Corps of Engineers
CESPD-ET-C	South Pacific Division, Corps of Engineers, Construction-Operations Division
CESPD-ET-E	South Pacific Division, Corps of Engineers, Engineering Division
CESPD-ET-P	South Pacific Division, Corps of Engineers, Planning Division
CESPD-ET-R	South Pacific Division, Corps of Engineers, Real Estate Division
CESPD-PM	South Pacific Division, Corps of Engineers, Program Management Directorate
DB	Design-Build
DCE	Design-Construction Evaluation
DDR	Design Documentation Report
DETS	Directorate of Engineering and Technical Services
DOD	Department of Defense
DPR	Detailed Project Report
EBS	Environmental Baseline Survey
EC	Engineering Circular
E&D	Engineering and Design
EIS	Environmental Impact Statement
ER	Engineering Regulation
FCSA	Feasibility Cost Sharing Agreement
FDM	Feature Design Memorandum
FMS	Foreign Military Sales
FRC	Feasibility Review Conference
FONSI	Finding Of No Significant Impact
GE	General Expense
GDC	General Design Conference
GI	General Investigation
GRR	General Reevaluation Report
HAP	Homeowners Assistance Program
HQUSACE	Headquarters, U.S. Army Corps of Engineers
HTRW	Hazardous, Toxic and Radiological Waste
IRC	Issue Resolution Conference
ISO	International Standards Organization

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App B

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ITR	Independent Technical Review
ITRT	Independent Technical Review Team
LEERD	Lands, Easements, Rights of Way and Disposal Sites
LRR	Limited Reevaluation Report
MILCON	Military Construction
MOA	Memorandum of Agreement
MSC	Major Subordinate Command
NEPA	National Environmental Policy Act
OMP	Operations Management Plan
O&M	Operation and Maintenance
PAS	Planning Assistance to States
PCA	Project Cooperation Agreement
PE	Project Engineer
PM	Project Manager
PMBP	Project Management Business Process
PMP	Project Management Plan
PMR	Project Modification Report
PRC	Project Review Conference
PRP	Preliminary Restoration Plan
PSP	Project Study Plan
QA	Quality Assurance
QAC	Quality Assurance Conference
QAP	Quality Assurance Plan
QC	Quality Control
QCC	Quality Control Certification
QCP	Quality Control Plan
QMI	Quality Management Indicator
QMP	Quality Management Plan
REDM	Real Estate Design Memorandum
ROA	Report of Availability
RPMBP	Regional Project Management Business Process
RRC	Reconnaissance Review Conference
SACCR	Schedule and Cost Change Request
SFO	Support for Others
TAQ	Total Army Quality
TQM	Total Quality Management
TRC	Technical Review Conference
USACE	U.S. Army Corps of Engineers
VE	Value Engineering
WFO	Work for Others

## **Appendix C PLANNING SUBPLAN**

### **1. Purpose**

This appendix establishes the process to assure the production of high quality Civil Works planning documents and supplements the guidance provided in the basic South Pacific Division (CESPD) Quality Management Plan. This guidance establishes a framework of general policies and principles to achieve planning services and documents that meet or exceed customer requirements, and are consistent with Corps policies and regulations. The guidance includes:

Main Body of Appendix C	Quality Management of Planning Products
Enclosure 1	South Pacific Division Milestone Requirements

### **2. Applicability**

2.1. This appendix applies to all activities of the CESPD Planning Division, the Directorate of Engineering and Technical Services, the Directorate of Programs Management and CESPD districts which are involved in the preparation, review or approval of planning documents.

2.2. The quality management process that is established in this appendix applies to all decision and implementation documents which are developed as a part of the CESPD planning program, including the following:

2.2.1. Reconnaissance Reports

2.2.2. Feasibility Reports

2.2.3. Post-Authorization Decision Documents, including General and Limited Reevaluation Reports

2.2.4. Major Rehabilitation Reports involving either authorization or new investment decisions.

2.2.5. Dredged Material Management Plans

2.2.6. Documents developed in support of the Section 1135, Section 204, and Section 206 Programs (except Plans and Specifications).

2.2.7. Documents developed in support of the Continuing Authorities Programs (except Plans and Specifications).

2.2.8. Documents developed in support of the Planning Assistance to States and Flood Plain Management Services Programs.

2.2.9. Master Plans

2.2.10. Financial Capability Analyses

2.2.11. Project Management Plans for the Feasibility Phase (referred to as the Project Study Plan or PSP in previous guidance).

2.2.12. Initial Appraisal Reports (Section 216)

2.2.13. Special Regional Studies

2.2.14. Planning Work For Others

2.3. The quality management process established in this appendix applies to all NEPA documents, including Environmental Impact Statements, Environmental Assessments and other related environmental documents, regardless of the program for which the documents are prepared. The quality control plans for all decision and implementation documents that are managed by other functional organizations and that are supported by environmental documentation shall include an independent technical review to ensure consistency between the environmental documentation and the decision and implementation documents.

2.4. Planning elements have significant input to other products, even though other functional organizations have the primary responsibility for the technical quality. The technical review processes for these products are described in the other appendices to the CESPD Quality Management Plan.

2.5. Reports, memorandums, legal opinions and other documents that are required to support the planning program, that are not an integral part of the Civil Works planning documents, and that are the responsibility of either Real Estate or Counsel, shall be reviewed and approved in accordance with the procedures and guidance provided by the Directorate of Real Estate, HQUSACE and the HQUSACE Chief Counsel.

### **3. References**

3.1. ER 5-1-11, Program and Project Management, dated 27 February 1998

3.2. ER 1105-2-100 - Policy and Planning, Planning Guidance, dated 22 April 2000.

3.3. EC 1165-2-203 - Technical and Policy Compliance Review, dated 15 October 1996.

3.4. CECW-PE Memorandum, dated 26 March 1997, subject: Planning Guidance Letter 97-10, Shortening the Planning Process.

3.5. CESPD-ET-P Memorandum, dated 6 March 1997, subject: Draft Supplemental QA/QC Guidance for Section 1135, WRDA (as amended).

3.6. CESPD-ET-P Memorandum, dated 19 March 1999, subject: Expedited Reconnaissance Phase Studies.

3.7. CESPD-ET-P Memorandum, dated 30 April 1999, subject: Guidance for Post-Authorization Decision Documents.

3.8. CESPD-ET-P Memorandum, dated 30 March 2000, subject: Processing of Planning Reports in the South Pacific Division.

3.9. CESPD Regional Project Management Business Process, dated February 2000.

3.10. CESPD-DE Memorandum, dated 24 March 2000, subject: Establishment of District Support Teams.

#### **4. Definitions**

The definitions of terms used in this appendix are generally consistent with the definitions provided in the basic CESPD Quality Management Plan. Within the text of this appendix, certain definitions are expanded upon to place them in a context that is appropriate for the planning program. All definitions are consistent with Reference 3.2, which provides overall guidance for the planning program

#### **5. Relationship of the Division and Districts**

5.1. The CESPD Planning Division shall review and approve the planning portion of each district's quality management plan and shall provide oversight of the quality control processes, with the assistance of the District Support Teams, which are described below in Paragraph 6.3. The Planning Division is responsible for quality assurance for planning documents prepared by the districts. The Planning Division shall also perform policy compliance review for planning products that are approved at CESPD. This memorandum does not address the Planning Division's roles and responsibilities for the other CESPD functions of command and control, program management, and regional interface.

5.2. Districts are responsible for controlling quality for all work that they accomplish. To assist in the achievement of high quality, the districts shall develop, carry out and keep up to date their own quality management plans. The quality management plans shall establish district roles, responsibilities and processes consistent with this appendix. Districts shall also be responsible for the development and implementation of quality control plans for decision and implementation documents covered by this appendix.

#### **6. Division Quality Assurance Responsibilities**

6.1. Chief, Planning Division. At CESPD, the Chief, Planning Division is responsible for the following quality assurance activities:

6.1.1. Providing technical oversight of the district's planning activities.

6.1.2. Developing procedures and guidelines for accomplishing interdisciplinary planning studies.

6.1.3. Assuring quality of district technical review and policy compliance programs for all planning studies, reports and activities.

6.1.4. Approval of the planning portion of the district's quality management plan and oversight of the district planning chief's approval of quality control plans for planning products.

6.1.5. Providing technical and planning management support to the districts, as requested. Providing assistance to districts in resolving major technical issues.

6.1.6. Assuring current policies are implemented in district planning products. Facilitating resolution of policy issues with HQUSACE and others.

6.1.7. Chairing issue resolution conferences.

6.1.8. Certifying district final decision documents for public distribution, forwarding final decision documents to HQUSACE for policy review and processing, and providing oversight of the Washington-level review.

6.1.9. Certifying adequacy of environmental impact statements and other documents, which demonstrate CESPD compliance with environmental statutes.

6.1.10. Recommending Division Commander approval of planning activities that have been delegated to CESPD.

6.1.11. Monitoring customer satisfaction with district planning products.

6.1.12. Leading the planning portion of the command inspection program.

6.2. Planning Program Manager. Planning program managers are members of the CESPD Planning Division staff who are responsible for the various parts of the planning program. At CESPD, the planning program managers often serve three roles. The first role includes the responsibility for managing the quality assurance program for an assigned study or program. The second role includes the responsibility for the quality assurance oversight in specific technical areas. And, the third role is the participation on a District Support Team. While the list of responsibilities that follow are mostly associated with the first role, most of the responsibilities are also common to the other roles.

6.2.1. Providing informal consultation regarding technical and policy issues.

6.2.2. Managing the CESPD quality assurance activities for assigned studies and seeking quality assurance support as required from members of the District Support Teams and other technical specialists.

6.2.3. Participating in selected technical review strategy sessions at the start of major studies.

6.2.4. Participating in selected CESPD mandated milestone conferences and other significant meetings, and providing feedback to the district's planning function chiefs.

6.2.5. Facilitating the resolution of policy issues and major technical issues with HQUSACE and others.

6.2.6. Facilitating issue resolution conferences with the districts and facilitating the Reconnaissance Review Conferences (RRC), Feasibility Scoping Meetings (FSM), Feasibility Review Conferences (FRC) and Alternative Formulation Briefings (AFB) with HQUSACE. May chair these conferences in the absence of the Chief, Planning Division.

6.2.7. Managing and performing policy compliance review for activities that have been delegated to CESPD.

6.2.8. Assisting in local sponsor education.

6.2.9. Provide training, coaching, guidance for review of documents and related "mentoring" activities with district staff.

6.2.10. Approving planning products on behalf of the Division Commander and District Support Team for planning products that can be delegated to the District Support Team. Recommending approval of planning products that can not be delegated.

6.2.11. Managing the audit of selected planning products and the associated review documentation to assess the adequacy of the district's quality control program.

6.2.12. Managing and participating in workshops to address systemic issues and new procedures.

6.2.13. Managing process action teams to improve the planning process and the production of planning products.

6.2.14. Providing input to the command inspection program.

6.3. District Support Teams. District Support Teams were chartered by Reference 3.10 to support the districts in the execution of their programs. They are tasked to provide maximum support to the districts in delivering projects to its customers. In the context of quality management, this would include providing oversight and quality assurance of the district's overall quality management program, assisting the districts on project specific issues, performing policy reviews for delegated actions and processing district products through CESPD, HQUSACE and ASA (CW). The District Support Teams include members from Planning, Engineering, Construction-Operations, Real Estate and Counsel. The coordination among the members of the District Support Teams is described in Reference 3.8, for planning products.

## **7. District Quality Control Participants**

7.1. Planning function chiefs, other function chiefs, the project manager, the study team, the review team and the review team leader all have significant roles and responsibilities in

achieving quality technical products. The roles and responsibilities of all the participating individuals shall be described in the district's quality management plan and shall include the responsibilities that are outlined in the independent technical review process which is described below in Paragraph 8.

7.2. Function Chiefs. The Chief, Planning Division in the Sacramento and Los Angeles Districts, the Chief, Planning Branch in the San Francisco District and the Chief, Planning and Project Management Branch in the Albuquerque District are the planning function chiefs. These planning function chiefs shall have the overall responsibility for the technical quality of planning products. Specific responsibilities of the planning function chiefs include the approval of quality control plans for planning products and the quality certification of planning products. The district chiefs of the Construction/Operations, Engineering and Real Estate Divisions, and the Deputy for Programs and Project Management, are also referred to as function chiefs. At the discretion of the planning function chief, chiefs of functional organizations such as economics, environmental resources and plan formulation may also be considered function chiefs for the processes set forth in this appendix. In accordance with Reference 3.1, the function chiefs are responsible for developing and maintaining a professional, technically competent workforce; establishing and maintaining the necessary systems, technical processes and environment to produce quality products; providing the technical oversight to assure production of quality products; and serving as principle members of the district corporate board. They are also responsible and accountable for the quality of the organization's technical products, assigning qualified members to project teams, keeping commitments made in management plans, and ensuring that their technical processes produce the desired results.

7.3. Project Manager. The project manager is the leader of the project delivery team. For the development of planning products, the project manager's role is to provide adequate time and resources to the independent technical review team for the review of planning products and adequate time and resources to the study team to respond to and resolve quality issues. Reference 3.9 describes the standard operating procedures for team establishment and the team processes. In accordance with these procedures, the project manager will negotiate the cost and schedule for members of both the study team and the independent technical review team with the appropriate section chiefs. To preserve the independence of the technical review, the project manager will not, however, be a member of the independent technical review team. To ensure that quality expectations are met in accordance with Reference 3.1, the project manager will ensure that certification requirements are met prior to approval by the District Commander or transmittal of a product to CESPD.

7.4. Review Team Members. Similar to the study teams, review teams shall be assigned representatives that have expertise in plan formulation, economics, environmental, hydrology and hydraulics or coastal engineering, civil design, geotechnical, real estate and other disciplines, as required. Since careful coordination between these disciplines is required, the review team must include senior staff with broad expertise. A goal will be the establishment of an informed, objective review team with full accountability to maintain objectivity. To ensure this objectivity, the members of the review teams must be independent from those who perform the work. Supervisors of study team members or, as indicated above, the project managers are not to be included on the review team. In addition, technical managers of contracts that provide

assumptions, clarify guidance or otherwise participate in the preparation of the products are not to be review team members. Review team members shall serve in a part time capacity and any one individual's review responsibilities shall not exceed 50% of their time. If sufficient staff is not available in a district, or if specialized review expertise is required, functional chiefs shall supplement the review team with personnel from other districts, divisions, headquarters, centers of expertise, laboratories, the local sponsor's organization or by contract. Project or study funds shall be used to pay for the cost of conducting technical reviews. A district in need of review assistance shall find the expertise needed and negotiate the schedule and cost for the required services. Functional members of the District Support Team may provide assistance in this effort. The formation of the review team should consider regional interests, resources, special expertise requirements and unusual complexity.

7.5. Regional Technical Specialists. The Engineer and Scientist Career Program Planning Board, in May 1997, directed that a strong career ladder for technical disciplines is essential to maintaining CESPD core competencies. With districts being fully responsible for the technical adequacy of products, the establishment of enhanced non-supervisory technical specialist positions at the district level is imperative and a division-wide advisory panel was established. Technical specialist positions are regional in nature, including the workload of the home district as well as the workload of the entire Division. A minimum of 30% of a regional technical specialist position is as a CESPD regional expert, which would include: serving as an independent technical reviewer for other districts, trouble shooting for other districts, or representing the entire Division at meetings and conferences. The other 70% of the position would be directed specifically at the home district's technical requirements. A listing of the technical specialist positions is included on the CESPD homepage.

7.6. Review Team Members for Water Control Management. Due to its special requirements, Water Control Management has been classified as a unique function of the Corps, as described in Appendix D, Engineering Subplan. Therefore, for planning products that either include modifications to water control management or otherwise may affect the operation of existing reservoir projects, the district will consult with the CESPD Water Control Center (WCC) staff to determine an appropriate water control review team member. The consultation will result in a water control review team member being selected from either: the CESPD Water Control Center staff, the local district producing the product, or another district. If a CESPD team member participates in the technical review of the product, that CESPD team member may not be involved in the quality assurance of that product.

## **8. District Independent Technical Review**

8.1. Independent Technical Review Process. Quality control is the appropriate evaluation of technical products and processes to ensure that they meet customer requirements and are in compliance with applicable laws, regulations, and sound technical practices of the disciplines involved. This is to be accomplished through a process of independent technical review. Quality assurance includes the oversight of the independent technical review process. The independent technical review process begins with a technical review strategy session, continues with seamless in-progress reviews and finishes with a comprehensive review of the final product.

8.2. Technical Review Strategy Session. The technical review strategy session shall form the basis for a quality control plan for all major studies. For feasibility studies and general reevaluation reports, this session will be held during the preparation of the project management plan for the feasibility phase. For other types of major products, this session shall be held early in the product development phase. The planning function chief shall chair the technical review strategy session. Also attending would be the project manager, other functional chiefs and representatives of the local cost-sharing sponsor. CESPD's planning program managers may also attend selected sessions, in a quality assurance role. In addition to establishing the independent review team, the participants shall establish the level of review, identify documents to be reviewed and identify policy or major technical issues that need to be brought to the attention of CESPD for resolution early in the study. This session should be combined with other initial formulation/scoping meetings. For products of an uncomplicated or routine nature, the technical review strategy session may be waived by the planning function chief.

8.3. Quality Control Plans. Quality control plans shall be prepared using information developed at the technical review strategy session. Specific quality control plans shall be prepared for complex planning products. A generic quality control plan shall be prepared for small or low risk products, such as reconnaissance studies and most products prepared for the Continuing Authorities Program (CAP). In developing the quality control plan, the districts are encouraged to rely heavily on their approved quality management plans, through reference, and highlight only exceptions. For major studies entering the feasibility phase, and for the initiation of post-authorization reevaluation studies, the quality control plan shall be fully integrated into the project management plan for the feasibility phase and will be certified by the planning function chief. All other quality control plans for planning products shall be approved by the planning function chief. A quality control plan, or a project management plan for the feasibility phase, shall, as a minimum, include the following:

8.3.1. A statement of the quality control plan objective.

8.3.2. A statement of the guidelines that will be followed for the technical review.

8.3.3. A roster of the proposed project study team or, in the case of a generic plan, a list from which the roster would be selected.

8.3.4. A roster of the proposed technical review team with the number of years and bullet description of relevant experience for each member. Similarly, in the case of a generic plan, a list from which the roster would be selected.

8.3.5. A list of documents to be reviewed by the technical review team.

8.3.6. A milestone list and schedule for review activities which integrate the mandated division milestones.

8.3.7. A discussion of proposed deviations from the approved quality management plan.

8.3.8. The cost estimate for conducting the independent technical review will be included either in the quality control plan, or in the project management plan for the feasibility phase.

8.4. Seamless Single Discipline Review. To maintain a seamless review concept, products of individual study team members shall, consistent with the scope and complexity of the products, receive technical review from review team members before they are released to other members of the study team or integrated into the overall study. A memorandum of record shall be the basis for establishing accountability for the quality of the product and the review. The review team member shall prepare the memorandum that shall become part of the review team's records. Specific issues raised in the review shall be documented in a comment, response, discussion, action required, action taken and, if appropriate, lessons learned format. Unresolved differences between the study and review team members shall be documented, along with the basis for the functional chief's decision on the issue. The Automated Review Management System (ARMS) may be used, at the option of the district. These reviews should be completed prior to major decision points in the planning process so that the technical results can be relied upon in setting the course for further study activities.

8.5. Product Review. The quality control plan shall identify products to be reviewed by the technical review team. The products would include: documentation for the major milestone conferences, documentation for mandatory issue resolution conferences, draft documents for public release and final documents. These products shall be essentially complete before review is undertaken and the branch and section chiefs shall be responsible for accuracy of the computations through design checks, supervisory review and other internal procedures, prior to the independent technical review.

8.5.1. Scope. The documents shall be reviewed using an interdisciplinary team approach. The document shall be reviewed for scope, adequate level of detail, compliance with guidelines and policy, consistency, accuracy, and comprehensiveness. The independent technical reviews will specifically address several areas of emphasis that are particularly important to planning products. The review shall ensure that the document tells a story that is a coherent whole, the steps of the analyses are consistent and follow logically, the assumptions are convincing and consistent, especially those related to the probable/most likely with and without project futures, and outstanding action items from the RRC, FSM, AFB, FRC, milestone conferences and other reviews are adequately addressed.

8.5.2. Integration of Prior Reviews. At the beginning of a document review, team members shall review their counterpart's presentations in the document. The review shall determine whether prior seamless review activities have produced the technical product envisioned during the seamless review. Material reviewed in the seamless review phase shall not be subjected to additional detailed review, except when the presentation in the documents is significantly different from the work previously reviewed or it is the judgement of the review team that the technical material may be causing the plan formulation process to produce unreasonable or inconsistent results.

8.5.3. Interdisciplinary Review. All members of the review team shall be expected to raise concerns in other functional areas. These concerns shall be addressed to the review team as a

whole. The review team shall then work through the appropriate review team counterparts to resolve technical issues. Review team meetings shall be open to representatives of CESPD for quality assurance purposes. It is the responsibility of the review team leader to seek resolution of disagreements among review team members before referring issues to the study team members.

8.5.4. Responses to and Resolution of Review Comments. The review team shall coordinate with the study team to resolve the issues that have been raised. Along with a description of the scope of the review, all review comments shall be documented in a comment, response, discussion, action required, action taken format and, when appropriate, lessons learned. In those cases where a functional chief decides unresolved disputes between the study team and the review team, the review documentation shall provide the basis for the functional chief's decision. The ARMS system may be used at the option of the district.

8.5.5. Final Documentation. Proper documentation is a key component of an effective independent technical review process. Significant decisions must be recorded and the entire process must leave a clear audit trail. The documentation of the independent technical review shall be included with the submission to CESPD. As an example, the review documentation for a final feasibility report will include memorandums from seamless single discipline review, memorandums from the milestone conferences and memorandums from the draft and final product reviews. The purpose of the review documentation is to show the full scope of the independent technical review and a summary of the review need not be prepared if action items are appropriately tracked.

8.5.6. District Certification. Documentation of the independent technical review shall be accompanied by a certification, indicating that the independent technical review process has been completed and that all technical issues have been resolved. This requirement is discussed further in Paragraph 15.

8.5.7. Certification of the Without-Project Hydrology. Because of the critical need to establish the without-project hydrology early in a flood control planning study, the chief of the district element that is responsible for the hydrological analysis will certify the hydrology prior to the first milestone conference in the feasibility phase. This certification will be included in the review documentation.

8.6. Dispute Resolution. The review team leader shall review the documentation to identify any outstanding disagreements between members of the study team and the review team. Any disagreements shall be brought to the attention of the appropriate functional chief to facilitate resolution of technical disagreements between study and review team counterparts. If a dispute is between representatives from different functional organizations, then the issue shall be forwarded to the planning function chief, who shall facilitate resolution. The appropriate functional chief shall make the final decision. The functional chief may consult with CESPD staff that can serve as an unbiased sounding board, or major technical issues may be forwarded to CESPD for resolution.

8.7. Policy Issue Resolution. Issues involving policy interpretation shall be brought to the attention of the planning function chief for resolution or referral to CESPD. In some cases, the planning function chief, may request CESPD to hold an issue resolution conference to resolve major policy issues. CESPD may also arrange for HQUSACE input or participation in the issue resolution conference.

8.8. Use of Checklists. Checklists may be used to guide the technical review and ensure that critical items are not overlooked. Checklists may be used to simplify the documentation of the review. Checklists may also be used to track outstanding action items for a particular study. The use of checklists shall not, however, eliminate the requirement to document specific comments. Checklists of items to consider during a review are included in Reference 3.3, Appendix B – Policy Compliance Review Considerations and in the Internal Control Review Checklist for Reference 3.2.

8.9. Lessons Learned. The development of a CESPD-wide lessons learned program is being led by the CESPD Engineering Division. In the interim, each district should take maximum advantage of lessons learned and share these lessons at appropriate workshops and conferences. The result of audits that have been conducted by CESPD to date, have identified a need to give special emphasis to the following items:

8.9.1. With and without project assumptions

8.9.2. Consistency with the process, terminology and other requirements of the Principles and Guidelines.

8.9.3. Cost Apportionment (who pays), especially when a locally preferred plan is proposed.

8.9.4. Commitments and unresolved issues in prior conference memorandums.

8.9.5. Consistency between the decision document and the EIS.

## **9. Quality Assurance Process**

9.1. In addition to the oversight of the technical review process as indicated above, quality assurance by CESPD shall include the following:

9.2. Informal Consultation. The cornerstone of CESPD's role in quality assurance is to provide informal consultation regarding technical and policy issues with district and customer counterparts.

9.3. Approval of Quality Management Plans. CESPD shall review and approve each district's quality management plan.

9.4. Milestone Conferences. Milestone conferences shall serve as checkpoints to ensure that quality control has taken place and that appropriate progress is being made in the studies. The results of the independent technical review and the resolution of issues shall be presented by

the review team leader. The purpose of the presentation shall be to confirm that the district is following the quality control plan and evaluate any changes. Selected CESPD participation in these conferences shall be a significant element of CESPD's quality assurance program. This opportunity shall be used to ensure, for example, that the districts are making appropriate site visits, public participation has been adequate and that the local sponsor is satisfied with the progress of the study. A further discussion of milestone conferences is in Paragraph 11.

9.5. Issue Resolution Conferences. Three types of issue resolution conferences will be held. The first would be at the request of a district to obtain technical and policy assistance on major issues, usually on a particular project. The second would be held at the request of CESPD, to address major issues raised as a result of quality assurance activities. And, the third would be those mandatory issue resolution conferences that include the RRC, FSM and FRC, and upon the recommendation of CESPD, the AFB, all of which are attended by HQUSACE. The CESPD Planning Division shall chair all issue resolution conferences. A draft memorandum for each conference shall be developed during the conference and signed within fifteen working days. For a mandatory conference with HQUSACE participation, the Chief of Planning at HQUSACE shall sign the memorandum. The CESPD Chief, Planning Division will sign the memorandum for other conferences.

9.6. Audits of Sample Products. CESPD shall conduct detailed quality assurance reviews of selected planning documents and the independent technical review documentation, at the request of the districts. The districts are encouraged to take advantage of these opportunities for assessing and improving their quality management processes. These reviews are for the purpose of identifying system problems, trends and possible improvements to the process, and assure compliance with current HQUSACE policy. Audits are available to the districts on a first come-first-served basis, with the exception that during each fiscal year, each district is to request at least one audit of either a feasibility report or a significant post-authorization decision document with an engineering appendix. The selection of studies for detailed review should be based on a number of criteria, including: the expressed needs and concerns of the district, new processes or techniques, or studies that have poor performance histories.

9.7. Annual Report to the District Commander. The command inspection program shall normally be used to ensure that all requirements in this appendix and the requirements reflected in each district's quality management plan are discussed with district personnel, and an assessment is presented to the district commander. When the focus of a particular command inspection is concentrated on other items, the assessment of the district's quality management program will be conducted as a separate, but similar initiative.

9.8. Training. The CESPD Planning Division has developed a catalog of presentations for planning training and will continue to add to this catalog. Members of the CESPD Planning Division staff are available to make presentations to the districts upon request. In addition, selected presentations are including on the Planning Division homepage, along with guidance and current activities.

9.9. Technical Workshops and Conferences. Because of the press of ongoing work, training, technology transfer, and the promotion of innovation often do not get the required attention.

These activities shall normally be accomplished through technical workshops and conferences. The most important of these is the South Pacific Division's annual planning workshop. Members of the planning community and those who work with the planning community, attend this workshop from the districts, CESPD, HQUSACE and often representatives from other divisions. The workshops provide an outstanding opportunity to present and address current planning issues and are an important part of the training program for all planners. Every opportunity to attend these workshops must be provided to members of the planning community.

9.10. Monitoring Technical Competency. Assuring that the team members who perform the work have the knowledge, skills and experience is an essential element of quality control and quality assurance. Quality assurance includes an evaluation of the district's development and maintenance of the technical competency for production and review, and assistance to enhance technical competency. Sharing technical capability between districts will be necessary to ensure that proper experts are available for technical review and CESPD may assist in facilitating these efforts. Distribution of division-wide resource allocations is a CESPD responsibility and the CESPD Planning Division shall be an active proponent for the district planning organizations.

9.11. Recognition Programs. The CESPD Planning Division shall manage those programs that recognize and promote outstanding achievement in the production of quality planning products and planning services. These programs include the annual Planning Excellence Award and Outstanding Planning Achievement Awards.

## **10. Expedited Reconnaissance Phase Studies**

10.1. Guidance for expedited reconnaissance phase studies is provided in Reference 3.6. As directed in this guidance, each district shall prepare a generic quality control/study plan for the preparation of all expedited reconnaissance phase study products. The plan will include a sample schedule and sample distribution of costs that would be adapted for each specific reconnaissance study.

10.2. Within the first month after the initiation of an expedited reconnaissance study, the study team shall be formed from potential candidates that are listed in the generic quality control/study plan and the plan shall be adapted for the implementation of the specific study.

10.3. The further reliance on informed judgement emphasizes the need for even more experienced study team members. Periodic peer consultation, rather than review will be included, especially after initial field investigations, to broaden and test the conclusions reached from the limited data available. Individuals participating in peer consultation will be selected from the same approved list as the study team. These individuals shall be the most experienced in the planning process, with the ability to draw conclusions from limited data.

10.4. The products developed during the expedited reconnaissance phase include the project management plan for the feasibility phase and a Section 905(b) Analysis. These products shall be subject to supervisory review during staffing. Independent technical review of these

products shall be limited to a single recognized expert in planning procedures and the planning process. This individual shall be selected from a list that would, also, be included in the generic quality control/study plan. The independent technical review shall ensure that the documents reflect a coherent logic and that the assumptions and conclusions are convincing and consistent.

10.5. As indicated in Reference 3.6, a CESPD mandated milestone conference will be held to preview the reconnaissance findings and will be used to establish a corporate district-sponsor position relative to the direction for the feasibility phase. A description of this conference is included in Enclosure 1. The conference will normally involve all members of the study team who will participate in the identification of the process for competing outstanding items and resolving outstanding issues. CESPD's planning program manager and representatives of the proposed local cost-sharing sponsor will also be given the opportunity to attend. The independent document review will occur between this interim milestone conference and the completion of the Section 905(b) Analysis. The results of this review shall be included in a memorandum that shall be included with the planning function chief's certification, which shall be placed in the project files and be subject to audit. In accordance with Appendix H of Reference 3.2, the Section 905(b) Analysis will be submitted to HQUSACE via e-mail and no formal transmittal letter is necessary.

10.6. In addition to indicating that the independent technical review process has been completed and that all issues have been addressed, the planning chief's certification of the project management plan for the feasibility phase will indicate that proposed streamlining initiatives will result in a technically adequate product and that quality control plan requirements have adequately been incorporated into the project management plan for the feasibility phase. The certification will be bound with the plan. Certification requirements are discussed presented in Paragraph 15.

## **11. Feasibility Milestone Conferences**

11.1. The quality management plan for each district shall include a milestone system that shall be employed as a performance measurement system for study teams and review teams working on planning products. Within the district milestone system, CESPD mandated milestone conferences shall be scheduled to occur at significant decision points in the study process. The requirements for the CESPD mandated milestone conferences are included in Enclosure 1. One of the functions of the milestone conferences shall be to recognize that key steps have been accomplished. Performance at each milestone shall be documented with a memorandum to be signed by the planning function chief. While the milestone requirements that follow are specific to feasibility reports, the districts shall establish appropriate internal milestones for other products in the quality control plans. At the initiation of the planning function chief, additional milestone conferences may be held.

11.2. Level of Participation. When HQUSACE takes advantage of the opportunity to participate in a CESPD mandated milestone conference, the conference will follow the guidance for other issue resolution conferences as indicated above in Paragraph 9.5. In those cases where the district requires a formal CESPD or higher headquarters position regarding study issues and a

meeting is the best vehicle for developing this position, a CESPD issue resolution conference may, also, be requested. Other milestone conferences will be chaired by the district planning functional chief, CESPD participation would be limited to informal consultation and oversight for quality assurance, and the conference memorandum will be signed by the district planning functional chief.

11.3. Technical Review Requirements. Technical review shall be broken down into manageable parts that correspond to the CESPD mandated milestone conferences. Therefore, documentation that is developed in support of conference discussions shall be reviewed by the technical review team and, to the degree practicable, issues should be resolved in advance of the conference. Since this quality control will have occurred prior to each milestone conference, the conference is free to address critical outstanding issues and set direction for the next step of the study, since a firm technical basis for making decisions will have already been established.

11.4. Submittal of Pre-conference Documentation. Unless alternative arrangements are made, the district shall submit to CESPD five copies of the same pre-conference documentation that is furnished to the independent review team, or provide this same pre-conference documentation electronically. Before the conference is held, the review documentation from the review team shall also be provided to all conference participants. A major goal of the process is to prepare the conference participants to make decisions regarding the future course of the study, which can be compromised if there are many outstanding technical issues. Towards this end, it is desirable for the technical review team and the study team to have resolved as many issues as possible prior to the conference. Because of time constraints, this activity may not be complete by the date of the conference. The review documentation that is provided to the conference participants should, to the degree possible, be annotated to indicate major issues that require discussion.

11.5. Areas of Special Emphasis. Each CESPD milestone conference that is held during the feasibility phase will include a review of the status of the project management plan for the feasibility phase to clarify any potential changes in cost and schedule. Any requirements established in the approval of the reconnaissance phase will be reviewed at each conference to ensure that specific study requirements established in the reconnaissance phase are addressed. Also, the transmittal letter for the documentation in support of an AFB will clearly outline all issues that should be addressed at the AFB.

11.6. Feasibility Scoping Meeting. Milestone conference requirements for studies undertaken through the expedited reconnaissance phase process are set forth in Reference 3.6. The first milestone conference in the feasibility phase has been expanded to incorporate the rescoping of the feasibility phase and HQUSACE participation is outlined in Reference 3.4. Preconference documentation must be provided to HQUSACE at least 35 days in advance of the conference. This documentation must clearly describe the assumptions and conclusions regarding the without project condition and provided a clear discussion of the formulation and screening of preliminary alternatives.

## **12. Post-Authorization Decision Documents**

The development of post-authorization decision documents will follow the same process and milestone system as used for feasibility phase studies. If adequate information exists where one or more of the milestone conferences can be eliminated, then this will be clearly indicated an equivalent document to a Section 905(b) Analysis for the post-authorization review and coordinated with the CESPD planning program manager. The ultimate processing requirements for the post-authorization decision document will depend on the approval authority of the proposed changes to the authorized plan. These authorities are specified in Reference 3.7. Generally, for changes that are not significant, both technical and policy review will be accomplished at the district. Policy compliance review will be accomplished at the Division for a decision document recommending significant changes to a project if the Federal cost of the project is less than \$15,000,000. For a decision document recommending significant changes to a project where the Federal cost of the project is greater than \$15,000,000, CESPD will forward the documentation to HQUSACE for policy review. The purpose of the CESPD and HQUSACE policy reviews will be to ensure that the study objectives have been achieved at the appropriate level of detail of analysis and policy issues regarding eligibility and consistency have been resolved.

## **13. Engineering Appendices to Decision Documents**

An engineering appendix is an essential part of a feasibility report or post-authorization decision document for a Civil Works project. Similar to other portions of the decision document, the technical review of the engineering appendix is a district responsibility. For decision documents that are approved by the district, the policy compliance review will also be a district responsibility. And, for any decision document that is not approved at the district, the policy compliance review of the engineering appendix has been delegated to CESPD. Either a printed copy or an electronic copy of the engineering appendix will be transmitted to CESPD with the draft decision document for policy compliance review. A printed copy of the engineering appendix will be included with the submission of the final report since the appendix will be published with the final decision document that supports authorization or the signing of a PCA.

## **14. Continuing Authorities**

14.1. Quality Control. The quality control activities for the Continuing Authorities Program (CAP) and Section 1135 projects will follow the concepts established above. However, the districts are encouraged to be innovative within this guidance to exercise efficient use of limited funds. Except for complex projects (multi-faceted characteristics, subject to numerous policy determinations, unique technical problems or potentials for numerous requirements for deviations to the model Local Cost Sharing Agreement), the plan for technical review may be established in a generic quality control plan developed for the specific continuing authorities programs.

14.1.1. Standing operating procedures for Preliminary Restoration Plans and Initial Appraisals shall be developed by each district that will include supervisory review and oversight review by

the designated district CAP or Section 1135 Coordinators, prior to transmission to CESPD. These reviews will be oriented to meet the requirements established in Reference 3.5.

14.1.2. A generic quality control plan may either establish a standing team for the review of documents covered by the generic quality control plan, or present a roster of reviewers from which an individual review team would be selected. The generic quality control plan will also identify products to be reviewed, durations required for review and required meetings and conferences. The generic quality control plan shall address all products that are prepared for the specific continuing authorities program.

14.1.3. The generic quality control plan will be adapted for a particular study, or a separate quality control plan will be prepared for approval by the planning function chief, no later than 30 days after the initial work allowance for the decision document is received. Intermediate milestone conferences are encouraged and would be held at the option of the district. Review team members shall be included in discussions with the study team as the proposed project is framed and products are identified.

14.1.4. Documentation and certification of the district's independent technical review will be submitted with the draft and final decision documents, which will also allow CESPD to perform a quality assurance check of the independent technical review process. The District Commander will certify the final decision for all projects recommended by the District Commander.

14.2. Quality Assurance and Policy Compliance. Approval authority and policy compliance review for the CAP and the Section 1135 programs has been delegated to CESPD. For these studies and projects, CESPD has both the quality assurance responsibilities for technical quality, as well as the quality control responsibility for policy. CESPD must, therefore, conduct a policy compliance review of studies and projects submitted by districts for CESPD approval. The assigned planning program manager shall be responsible for the quality assurance and policy compliance review.

14.2.1. Issues that arise over appropriate level of detail should be elevated to the Division for early resolution.

14.2.2. At least two weeks prior to the proposed release of a draft feasibility report for public review, the report will be furnished to CESPD for an initial policy compliance review. This review will use the checklist that HQUSACE has developed for policy compliance review of other decision documents and that is included in Attachment 2 of Reference 3.3. Within ten working days, the District will be notified that they may release the report for public review, or that there are significant policy issues that may materially effect the conclusions and recommendations in the report, which would cause the report not to be released. CESPD will continue its review, concurrent with the public review of the report, concluding this effort within 30 days from the receipt of the documents.

## **15. Certification of Quality Control**

15.1. Documentation of the independent technical review shall be accompanied by a certification, indicating that the independent technical review process has been completed and that all issues have been resolved. This requirement applies to all implementation and decision documents that will be approved by the district commander, approved by the district project review board, documents that will be forwarded to CESPD for approval and all documentation that will be forwarded by the division to HQUSACE for review or approval.

15.2. For the feasibility study process, the certification requirements apply to all Section 905(b) Analyses, project management plans for the feasibility phase, pre-conference documentation for issue resolution conferences and alternative formulation briefings and draft and final feasibility report submittals.

15.3. For decision documents that include a signed recommendation of the District Commander to the Division Commander, such as a final feasibility report, post authorization decision document (GRR) or final report under a CAP, the certification will follow the example that is included as Appendix H to the CESPD Quality Management Plan. This certification is to be signed by both the planning function chief and the district commander and will include the review documentation as an enclosure. Other submittals will be certified by the planning function chief and the certification may be included with the transmittal letter for the product and review documentation.

15.4. These certification responsibilities shall be specified in the District's quality management plan and cannot be delegated. Any certification requirements for significant modifications to a decision document that result from policy review, will be specified in the CESPD guidance that requires the modifications.

## **16. Process Deficiency Corrections**

Significant deficiencies may be revealed in a planning product, after it has been certified at the district. If, on the off chance a planning product is produced that includes significant deficiencies, then the district will develop and implement a plan of corrective action to ensure that such deficiencies are not repeated. Progress on implementing the plan of action will be actively reported and monitored through the CESPD Executive Project Review Board process. This reporting requirement does not apply to any product that has been subject to an audit, as described in Paragraph 9.6.

## **ENCLOSURE 1**

### **SOUTH PACIFIC DIVISION MILESTONE REQUIREMENTS**

#### **1. RECONNAISSANCE PHASE**

A CESPD mandated milestone conference will be held to preview the reconnaissance findings and will be used to establish a corporate district-sponsor position relative to the direction for the feasibility phase. The conference will normally involve all members of the study team who will participate in the identification of the process for competing outstanding items and resolving outstanding issues. CESPD's planning program manager and representatives of the proposed local cost-sharing sponsor will also be given the opportunity to attend.

#### **2. FEASIBILITY PHASE**

##### **2.1. F3 Milestone Conference:**

The district study team shall present the refinement of existing conditions, any new assumptions for the without project condition, results of additional public involvement, problems and opportunities, the identification of specific planning objectives and planning constraints, and the evaluation of the preliminary plans considered in the feasibility phase.

The technical review manager shall summarize the results of the technical review and the resolution of issues. These issues would normally involve the refinement of the without project conditions and the formulation, design and evaluation of with-project conditions for the preliminary plans.

The study cost-sharing sponsor shall summarize the views of the agency and identify any plans that the agency wishes to include in the final array of alternatives.

The project management plan for the feasibility phase will be reviewed and the conference will serve as the HQUSACE Feasibility Scoping Meeting (FMS) to address potential changes in the project management plan for the feasibility phase.

Any policy questions shall also be raised at the milestone conference and if these cannot be resolved, the CESPD planning program manager will raise them to the CESPD Chief, Planning Division or HQUSACE for resolution. Federal interest shall be reviewed.

This milestone conference shall mark the completion of an iteration of planning steps with the screening of preliminary plans and shall conclude with a consensus on the plans that will be considered in the final array of alternatives that will be considered in the final array of alternatives.

##### **2.2. F4 Milestone Conference:**

This conference shall mark the completion of the evaluations of the final array of plans and prepare for the alternative formulation briefing that will be held with HQUSACE.

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The study team shall present the evaluation of the final array of alternatives that will be presented in the feasibility study.

Again, the technical review manager shall summarize the results of the technical review and the resolution of issues. These issues would normally involve the formulation, design and detailed evaluation of the with-project conditions for the final array of plans.

The study cost-sharing sponsor shall summarize the views of the agency and identify any issues that must be resolved prior to the selection of a locally preferred plan.

Federal interest shall be reviewed.

This conference shall reach a consensus that the evaluations are adequate to select a locally preferred plan and the NED Plan. The conference shall also identify policy issues that will be of concern at the alternative formulation briefing (AFB) and develop a listing of the issues that shall be presented at the AFB. There will be no surprises at the AFB and CESPD shall actively support the district.

## **Appendix D ENGINEERING SUBPLAN**

### **1. Purpose.**

This appendix provides the general policies and procedures for the execution of quality management activities conducted for engineering products:

Main Body of Appendix D	Quality Management of Engineering Products
Enclosure 1	QM Guidelines for Dam Safety Program
Enclosure 2	Implementation Milestones for Implementing Civil Works Projects
Enclosure 3	QM Guidelines for HTRW & CDQM
Enclosure 4	Definitions used in HTRW & CDQM Projects
Enclosure 5	Acronyms used in HTRW & CDQM Projects
Enclosure 6	Quality Management of Water Control and Water Quality Products

### **2. Applicability.**

2.1. This appendix supplements the guidelines provided in the main body of the South Pacific Division Quality Management Plan and applies to all activities of the CESPD Engineering Division, the Directorate of Engineering and Technical Services, the Directorate of Programs Management and CESPD Districts, which are involved in the preparation, review, and approval of engineering products.

2.2. The quality management process outlined herein applies to all engineering services and products.

### **3. References.**

3.1. ER 5-1-11, Program and Project Management

3.2. ER 1110-1-12, Engineering and Design Quality Management

3.3. ER 1110-2-1150, Engineering and Design for Civil Works

3.4. ER 1110-345-100, Design Policy for Military Construction

3.5. EC 1165-2-203 Technical Policy Compliance Review.

3.6. CEMP-ET Memorandum dated 23 April 1997, SUBJECT: Department of Defense, Inspector General's Audit on the Use of Energy Conservation Measures in the Design of New Military Facilities.

3.7. ER 1110-1-8100, Laboratory Investigations and Testing.

3.8. CESPD R 1110-1-8, Design and Construction Evaluations.

#### **4. Definitions.**

See paragraph 4 of main Quality Management Plan.

#### **5. General.**

5.1. The policy of the CESPD-ET-E is to deliver quality engineering products, on time and within budget to our customers. The districts are responsible for the preparation of engineering products and the quality control necessary to produce those products. CESPD-ET-E is responsible for quality assurance of the engineering process. The quality management guidance herein is a fully integrated part of the Regional Project Management Business Process.

5.2. Quality Management Plans. The districts are responsible to prepare, and keep current, a Quality Management Plan for engineering and design products. The engineering quality management plan shall be a part of the overall District quality Management Plan and shall provide the general guidance for work produced by the Engineering Division of a district, including the input provided by other functional organizations which support the development of the engineering products. CESPD-ET-E shall evaluate and approve the engineering portions of the district Quality Management Plans.

5.3. Quality Control Plans. All engineering and design services shall be prepared using a product specific, generic or programmatic quality control plan. The district is responsible for preparing the Quality Control Plan. Quality Control Plans shall be embedded within the Project Management Plan (PMP) for a project. If there is sufficient need, a Technical Review Strategy Session (TRSS) may be held shortly after the initiation of design to discuss, revise and finalize the draft QCP embedded within the PMP. The responsible function chief in the district (i.e. Chief, Engineering Division) shall review and approve the quality control plan.

5.4. Quality Assurance. CESPD-ET-E is responsible for quality assurance of quality control activities for engineering products prepared by the districts, to include products designed wholly in house or by a combination of contract and in house forces. For that portion of work conducted by contract forces, the district shall be responsible for quality assurance of the contractor's quality control activities and CESPD shall maintain a general oversight of this process.

5.5. Programmatic/Generic Quality Control Plans: Product specific quality control plans shall be prepared for all products except those of a routine, recurring nature. Cost, complexity, risk and visibility shall be the criteria used to determine if a product specific or programmatic/generic QCP is required. Programmatic or generic QCPs may be used for the general categories of engineering products (not covered by product specific QCPs) listed in Appendix A, Table 1,

when their implementation cost does not exceed certain thresholds as listed in the referenced table.

5.6. Funding: Quality control activities performed by Districts shall be funded by the appropriate project. All Division quality assurance activities as well as any quality control activities related to delegated policy compliance review are funded by division funds.

## **6. District Quality Control Responsibilities**

6.1. District shall prepare Quality Control Plans for each engineering product.

6.2. The Quality Control Plan shall be a document supplementing the general quality control activities outlined in the district's Quality Management Plan and describing unique quality control activities for a specific product. As such the length and level of detail should be commensurate with the risk and complexity of the product. The Quality Control Plan shall address (at a minimum) the following:

6.2.1. Name of Project

6.2.2. Description of Product

6.2.3. Name and location of customer

6.2.4. A statement of the quality control plan objective.

6.2.5. A statement of the quality guidelines that will be followed for the technical review.

6.2.6. Members of the product development team.

6.2.7. Members of the Independent Technical Review Team with a statement of the technical qualifications of each member in their respective areas of expertise. (Including Mandatory Centers of Expertise.)

6.2.8. Major Milestones

6.2.9. Unique, sensitive or high visibility items requiring special attention. Include items, which require technical or policy clarification, and environmental constraints such as complying with records of decision.

6.2.10. A list of documents to be reviewed by the independent technical review team, and dates of scheduled reviews.

6.2.11. Special interest items such as value engineering, cost controls, contractor evaluation procedures, acquisition strategy, etc.

6.2.12. Partnering or conflict resolution procedures for the stakeholders.

6.2.13. Discussion of constraints on the process, such as staying within budget, on time, and how these constraints may affect the quality of the finished product.

6.2.14. A list of financial resources that shall be allocated to the quality control process, including review, and a breakdown by discipline and by product. The cost estimates for conducting the independent technical review shall be included as a separate line item in the study/product development cost estimate.

6.2.15. The quality control plans for all engineering documents that are supported by NEPA or other environmental documentation shall include an independent technical review to ensure consistency between the environmental documentation and the engineering documents.

6.3. Approval of Quality Control Plans. The responsibility for review and approval of QCPs is delegated by CESPD to its districts. The Chief of Engineering Division at the district preparing the quality control plan for engineering products shall certify (i.e. review and approve) that the plan meets the customer's needs and conforms to Corps of Engineers requirements by reviewing and approving the QCP.

6.4. Use of Checklists: Checklists may be used to guide the independent technical review and insure that critical items are not overlooked. Checklists may also be used to simplify the documentation of the independent technical review. The use of checklists in the documentation would not, however, eliminate the requirement to document specific comments.

6.5. Monitoring/Fostering Technical Competency: Assuring that the team members who perform the work have the knowledge, skills and experience is an essential element of quality control and quality assurance. Quality assurance includes an evaluation of the district's development and maintenance of the technical competency for production and review.

6.6. Quality control of contractors work: The district shall prepare a quality control plan which discusses the contractor's quality control and it's relationship to the entire project. For design-build contracts, the A-E shall develop and follow a QCP for their product including independent technical review of the design product and construction quality assurance activities. District review of submittals shall be to assure compliance with the request for proposal (RFP) and for QA of the contractor's quality control activities. The contractor's quality control plan shall be approved by the responsible function chief at the district. The district's quality control plan for the overall engineering product, including quality control of in house activities and it's quality assurance of contractor activities, shall be reviewed and approved by the Chief, Engineering Division.

6.7. QC Certification and Final Documentation: Proper documentation is a key component of an effective independent technical review process, and is a significant resource for lessons learned in the quality control process. Significant decisions must be recorded and the entire process must leave a clear audit trail. Whether a project is submitted to higher headquarters or approved within the district, the Chief of Engineering Division shall recommend to the District Commander (DE) that the DE certify that the quality control process for that product has been completed and that all identified technical issues have been resolved. The DE's certification

may not be down delegated. This certification and accompanying documentation shall be in accordance with Appendix H and shall be made a part of the official District project files. For products approved at headquarters, copies of the QC certification and documentation shall accompany the product to headquarters. For products either approved at headquarters or within the district, copies of the QC certification and associated documentation shall be provided to CESPD-ET-E for informational purposes. Certification requirements for a range of engineering products are shown in Table A-3 of Appendix A.

6.8. General Requirements. The following requirements apply to all engineering products except as noted:

6.8.1. Independent Technical Review Process: In addition to supervisory/peer review, quality control procedures shall include independent technical and seamless review.

6.8.1.1. Formation of Independent Technical Review Team (ITRT):

6.8.1.1.1. The ITRT shall be assigned representatives from disciplines involved in product development, such as plan formulation, economics, environmental, hydrology and hydraulics and coastal engineering, water quality, HTRW, civil design, structural design, geotechnical, real estate, project management and other disciplines, as required. Since careful coordination between these disciplines is required, the ITRT must include senior staff with broad expertise. The members of the ITRT must be independent from those who perform the work. Supervisors and work leaders of product development team members shall not be included on the ITRT. Individual ITRT members shall serve in a part time capacity and 50% or less of their work shall be review. If sufficient staff is not available in a district, or if specialized review expertise is required, the review team leader and respective functional chiefs shall supplement the review team with personnel from other districts, other divisions, headquarters, Regional Technical Specialists, centers of expertise, laboratories, the customer's organization or by contract. Project funds shall be used to pay for the cost of conducting technical reviews. A district in need of review assistance shall find the expertise needed and negotiate the schedule and cost for the required services. The formation of the review team should consider regional interests, resources, special expertise requirements and unusual complexity.

6.8.1.1.2. For Water Control Products. Districts shall consult with MSC Water Control Center staff when selecting a water control ITRT member. Reference Enclosure D-6 for specifics regarding Quality Management of Water Control related products.

6.8.1.2. Seamless Review: To maintain a seamless review concept, products shall receive a technical review before they are integrated into the overall product. A memorandum of record shall be the basis for establishing accountability for the quality of the product and the review. Each member of the ITRT shall prepare a memorandum documenting their comments, including a statement that a reviewer has no comment on a product if such is the case, which shall become part of the ITRT's records. Specific issues raised in the review shall be documented in a comment, response, action required and action taken format. Unresolved differences between the study/product development and ITRT members shall be documented. The Automated Review Management System (ARMS) shall be encouraged for use in all

projects and is required for all MILCON products. These reviews must be completed prior to major decision points in the process so that the technical results can be relied upon in setting the course for further activities.

6.8.1.3. Product Review: The QCP shall identify products to be reviewed by the ITRT, a schedule as well as cost for these reviews. These products shall be essentially complete before review is undertaken and the branch and section chiefs shall be responsible for accuracy of the computations through design checks and other internal procedures, prior to conduct of an independent technical review. The products shall be reviewed using an interdisciplinary team approach. The products shall be reviewed for scope, adequate level of detail, compliance with guidelines and policy and customer needs, consistency, accuracy, and comprehensiveness as outlined in the QCP.

6.8.1.4. Integration of Prior Reviews: ITRT members shall review their counterpart's portions of the product. The review shall determine whether prior seamless review activities have produced the technical product envisioned during the seamless review. Material reviewed in the seamless review phase shall not be subjected to additional detailed review, except when the products is significantly different from the product previously reviewed; or if it is the judgment of the ITRT that the product quality can be improved within established funding and time limitations.

6.8.1.5. Interdisciplinary Review: All members of the ITRT shall be expected to raise concerns in other functional areas. These concerns shall be addressed to the ITRT as a whole. The ITRT shall then work through the appropriate ITRT counterparts to resolve the issues/concerns. ITRT meetings shall be open to representatives of CESPD for quality assurance purposes and to the customer. It shall be the responsibility of the ITRT leader to seek resolution of disagreements among ITRT members before referring issues to the product development team members.

6.8.1.6. Responses to ITRT Comments: The ITRT shall meet with the study/product development team to resolve the raised issues. Along with a description of the scope of the review, all review comments shall be documented in a comment, response, action required, action taken and backcheck format. In those cases where unresolved disputes between the design team and the ITRT are decided by a functional chief, the review documentation shall provide the basis for the functional chief's decision.

6.8.1.7. Dispute Resolution: The ITRT leader shall review the documentation to identify any outstanding disagreements between members of the design team and the ITRT. Any disagreements shall be brought to the attention of the appropriate functional chief to facilitate resolution of technical disagreements between design team and ITRT counterparts.

6.8.2. Issue Resolution Conferences: Three types of issue resolution conferences may be held. The first would be at the request of a district to provide technical and policy assistance on major issues, usually on a particular project/product. The second would be held at the request of CESPD, to address major issues raised as a result of quality assurance activities. And, the

third would be those mandatory issue resolution conferences required for specific engineering products as required by engineering regulations.

#### 6.9. Civil Works Products.

6.9.1. Civil Works Milestones. As part of the Quality Control process, Districts shall follow a milestone system for development of civil works engineering products in the design (post feasibility) phase. Although a formal milestone system is a difficult mandate, guidance is provided below for minimum requirements. Specific milestone objectives shall be tailored to the engineering product and included in the product's Quality Control Plan. A detailed description of each milestone is provided in Enclosure 2 of this subplan.

Milestones for Civil Works projects are significant or important events in the execution of the project. Milestones are important tools for measuring progress along a pre-defined path to the completion of the project. The milestones that are defined below are not a complete list of all activities that must be performed to complete a project. These milestones are considered to be the major accomplishments that must be completed on schedule to help ensure that the overall final product is technically correct and satisfactory to the local sponsor. The numbers shown in parentheses indicate milestones tracked by Programs and Project Management Division and included in the Project Executive Summary Report. Milestones tracked by headquarters as Command Management and Review (CMR) dates are identified by "(CMR)".

##### 6.9.1.1. Design Documentation Report Milestones:

- D1 Design Documentation Report Initiated (400)
- D2 General Design Conference (270)
- D3 Technical Review Strategy Session
- D4 Quality Control Plan Approval
- D5 Value Engineering Study Completed
- D6 Submit Intermediate Design Documentation Report for Independent Technical Review
- D7 Submit Near-Final Design Documentation Report for Independent Technical Review
- D8 Local Sponsor Review Completed
- D9 Quality Control Certification
- D10 Design Documentation Report Approval (480)

##### 6.9.1.2. Plans and Specifications Milestones:

- P1 Plans and Specifications (P&S) Initiated (500)
- P2 Design Coordination Meeting
- P3 Technical Review Strategy Session
- P4 Quality Control Plan Approval
- P5 Submit Intermediate P&S for Independent Technical Review
- P6 Submit Near-Final P&S for Independent Technical Review
- P7 Biddability, Constructability, Operability and Environmental (BCOE) Review Conference
- P8 Final Local Sponsor Review Meeting
- P9 BCOE Certification

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P10 Quality Control Certification

P11 Plans and Specifications Approval (290)(590) (CMR)

#### 6.9.1.3. Engineering During Construction Milestones:

C1 Pre-Advertise Contract in Commerce Business Daily

C2 Construction Contract Advertised (950)

C3 Government Estimate

C4 Bid Opening (951)

C5 Engineering Considerations and Instructions to Field Personnel Report

C6 Construction Contract Awarded (960) (CMR)

C7 Final O&M Manual Transferred to Local Sponsor (981)

C8 As-Built Drawings Transferred to Local Sponsor (982)

#### 6.9.2. Hydraulic, Hydrologic and Related Products.

6.9.2.1. Activities associated with the development of hydraulic, hydrologic, water quality, water control, sediment, groundwater and related products shall be outlined in the format of a Hydrologic Engineering Management Plan (HEMP), as required by EP 1110-2-9. The HEMP is a quality control measure for ensuring the complete outline of required H&H related activities and their interrelationship with other product development activities that are required in the development of engineering products, and their costs, and is consistent with guidelines set forth in ER 1110-2-1150. The HEMP format shall be utilized in the H&H related scoping contained in a study's/project's PSP or PMP, respectively.

6.9.2.2. Certification of the Without-Project Hydrology - Civil Works GI Studies. Because of the critical need to establish the without-project hydrology early in a flood control planning study, the Chief of the district element that is responsible for the hydrologic analysis will certify the hydrology prior to the first milestone conference in the feasibility phase. This certification will be included in the review documentation.

#### 6.9.3. Engineering Appendices for Decision Documents.

6.9.3.1. Submittal of Engineering Appendices. An engineering appendix is an essential part of a feasibility report or post-authorization decision document for a Civil Works project. Similar to other portions of the decision document, the technical review of the engineering appendix is a district responsibility. For decision documents that are approved by the district, the policy compliance review will also be a district responsibility. And, for any decision document that is not approved at the district, the policy compliance review of the engineering appendix has been delegated to CESPD. Either a printed copy or an electronic copy of the engineering appendix will be transmitted to CESPD with the draft decision document for policy compliance review. A printed copy of the engineering appendix will be included with the submission of the final report since the appendix will be published with the final decision document that supports authorization or the signing of a PCA.

6.9.3.2. Section 1202 of WRDA 1986. Section 1202 of WRDA 1986 (PL 99-622) requires that any report submitted to Congress for the purpose of authorizing or funding the "construction of a water impoundment facility, shall include information on the consequences of failure and geologic or design factors which could contribute to the possible failure of such facility." This requirement can be met by including the analysis in the Engineering Appendix and a summary of the consequences in the recommendation section of the main body of the report. The independent technical review of the decision document should identify and confirm that the requirements of Section 1202 have been met.

6.10. Military Construction, HTRW, WFO and SFO programs. The following special requirements apply to these programs.

6.10.1. Design review shall be in accordance with ER 1110-345-100 paragraph 9 and ER 1110-1-12 paragraph 6h(3) except that design by private A-E firms shall normally be reviewed by the A-E with a quality assurance review by the district. Requirements include but are not limited to the following:

6.10.1.1. A QCP should be prepared for every engineering product or service whether obtained using in-house forces, an A-E or an A-E product in a design-build contract. While the QCP should be complete, it need not duplicate items in the QMP.

6.10.1.2. For contract work, the A-E shall be required to submit a QCP with the fee proposal. The nature of the QCP shall be determined with the A-E in pre-proposal meetings. The QCP should be provided to the project manager for incorporation into the project management plan (PMP) prior to initiation of the technical work on the project. For large or complex projects the A-E may be allowed to submit a generic QCP with his fee proposal, with a fully detailed QCP furnished in the first phase of the work. The extent of the independent review should be commensurate with the complexity of the project and is not intended to be a detailed check. All design reviews will be accomplished using the Automated Review Management System (ARMS). Designs prepared by private A-E firms will normally be reviewed by the A-E, with a quality assurance review by the district office. Only a single level of review shall be required for concept design.

6.10.1.3. A QCP shall be submitted for A-E products in a design build contract, which conforms to the requirements in the QMP. Designs prepared by A-E firms in design build contracts shall normally be reviewed by the A-E with a quality assurance review by the district office. In design build contracts, the district shall review design submittals to assure compliance with the RFP.

6.10.1.4. Review of in-house designs and quality assurance reviews of A-E products should be performed by a interdisciplinary team specifically selected based on project requirements. The use of Regional Technical Specialists and Technical Centers of Expertise and Centers of Standardization for projects is strongly encouraged. Certain projects or portions of projects require special design procedures or review by the Mandatory Centers of Expertise (MCX). These MCX include the Utility Monitoring and Control System MCX; HTRW MCX; Intrusion

Detection Systems MCX; Protective Design MCX; Army Range and Training Land Program MCX; and Transportation Systems MCX.

6.10.2. The relationship with programs and project management will be as defined by reference 3.1 above.

6.10.3. Engineering products for the Military, WFO, and SFO programs shall be reviewed in accordance with a QCP. The QCP shall be developed using the district QMP and division QMP as guides. However due to the wide variety of products and the unique requirements imposed by various customers, the individual QCP may be adjusted to meet any special requirements.

6.10.4. Quality management guidelines for HTRW and CDQM programs are provided in Enclosure D-3.

6.10.5. Quality control plans shall address the energy conservation measures and energy budget as required by reference h in paragraph 3 of this appendix.

6.11. Flood Recovery Efforts: See also Construction-Operations Subplan, Enclosure 3, Operations and Readiness Function. Due to its special requirements, Natural Disaster Procedures are classified as a unique function of the Corps as prescribed in the Division organizational guidelines. Quality control of products resulting from flood recovery efforts is prescribed in the existing engineering regulations outlined in the above referenced subplan as well as below:

6.11.1. Code 200 Emergency Operations (Flood Response and Post Flood Response): Due to the emergency nature of the products developed under this authority, quality control of flood response products shall consist of peer or supervisory review, only, prior to implementation. Quality control of post-flood response products shall be accomplished by CESPD until an approved QCP is developed and approved by the district.

6.11.2. Code 300 Rehabilitation Assistance: Quality control plans and independent technical review are required for products developed under this authority.

6.12. QA/QC of Laboratory Investigations and Testing: The responsibilities, policies, procedures for laboratory investigations, materials and chemistry testing and analytical services performed in support of design, construction and operation of Civil Works, Military and Support for Others programs are outlined in reference 3.8 above.

## **7. Division Quality Assurance Responsibilities**

7.1. Quality Assurance of the Engineering and Design Process. CESPD shall perform quality assurance of the engineering and design process. This shall include evaluation of command management review indicators and other measurements that are to be developed.

7.2. Execution: As part of the CESPD team, quality assurance responsibilities shall be executed by representatives of CESPD-ET-E consistent with paragraph 7 of the main body of the South Pacific Division QMP:

**7.2.1. Focus Area #1: Develop and Maintain the CESPD Quality Management Plan:**

CESPD-ET-E shall develop the Engineering Subplan and have input into the overall Division Quality Management Plan.

**7.2.2. Focus Area #2: Review and Approve District Quality Management Plans:** CESPD-ET-E shall participate in the review and approval of each District's Quality Management Plan.

**7.2.3. Focus Area #3: Monitor Development and Execution of Product Quality Control Plans:**

CESPD-ET-E shall ensure that procedures are in place within each district for the development, review, approval and execution of product specific, generic and programmatic quality control plans for engineering products. The responsibility for review and approval of QCPs is delegated by CESPD to its districts. CESPD-ET-E shall ensure compliance with approved QCPs by periodically verifying the independence of independent technical reviews (ITR), resolution of comments, documentation, etc. CESPD-ET-E shall oversee the district QA role when the district conducts QA activities for A-E and other contracted products. This also includes oversight of district QA plans for monitoring construction contractor's QCPs.

**7.2.4. Focus Area #4: Audit District Quality Processes.** CESPD-ET-E shall review district products for QC Process Evaluation. This includes meeting periodically with districts to review their quality control processes through evaluation of selected products and services at various stages of development to assure compliance with the QMP. Feedback to the district on these quality assessment audits is essential for district process improvement as feedback to HQUSACE for lessons learned distribution throughout USACE. The QA audit of civil works products may utilize as one performance measure the Management Control Evaluation checklist in Appendix H of ER 1110-2-1150.

**7.2.5. Focus Area #5: Review and Evaluate Performance Indicators.** CESPD-ET-E shall proactively track existing performance indicators and develop and maintain regional indicators as required. This includes the quarterly district Quality Management Indicator report previously described above. Identify areas needing command attention to assure a viable organization that is responsive to USACE customers through quality products.

**7.2.6. Focus Area #6: Continuous Involvement in Product Development.** CESPD-ET-E shall participate in selected project meetings as required by policy guidance and as needed for high visibility and/or complex projects. MSCs are to assist in resolution of policy and/or technical issues and interface with HQUSACE as appropriate, approve deviations from criteria and conduct selected project site visits.

**7.2.7. Focus Area #7: Partner, Coordinate and Mentor with District.** CESPD-ET-E shall provide for continuous dialog and interactions with counterparts to keep them informed of upcoming work, training, new regulations, etc. Also, develop and implement regional guidance, provide regional training, share lessons learned and facilitate changes in criteria, facilitate

partnering and sharing of resources across districts and evaluate district technical capabilities and needs. Quality assurance also includes an evaluation of the district's development and maintenance of the technical competency for production and review of a product.

**7.2.8. Focus Area #8: Approve/Certify Programming Activities.** CESPD-ET-E shall provide support to the CESPD Directorate of Program Management in its coordination of programming activities with HQUSACE and districts.

**7.2.9. Focus Area #9: Conduct and Provide Feedback on Command and Staff Inspections.** CESPD-ET-E shall examine mission execution, level of training, FTE resources, workload, compliance with standards and regulations and obtain feedback on morale, welfare, discipline and problems/needs through command assistance visits.

**7.3. District Support Teams:** District Support Teams were chartered to support the districts in the execution of their programs. They are tasked to provide maximum support to the districts in delivering projects to its customers. In the context of quality management, this would include providing oversight and quality assurance of the district's overall quality management program, assisting the districts on project specific issues, performing policy reviews for delegated actions, processing district products through CESPD, HQUSACE and ASA (CW), performing quality assurance audits as well as the full range of quality assurance activities as outlined above. The District Support Teams shall include representation from Engineering in addition to members from Planning, Construction-Operations, Real Estate and Counsel.

**7.4. Design Construction Evaluations (DCE).** As part of CESPD's quality assurance responsibilities, CESPD-ET-E and CESPD-ET-C have jointly established and are executing a DCE program within CESPD. This program is detailed in CESPD R 1110-1-8 and fully conforms to the requirements in ER 1110-1-12. The DCE program generally shall utilize the processes outlined in the QA Focus Areas, above.

**7.5. Delegated Responsibilities of CESPD:** Approval authority for a number of programs has been delegated to CESPD-ET-E. In addition to quality assurance responsibilities for technical review, CESPD has quality control responsibilities for policy compliance of delegated authorities. In that regard, CESPD-ET-E is responsible for policy compliance review of products that are approved by the Division Commander. HQUSACE will provide policy QA of programs/documents delegated to CESPD-ET-E. Procedures for CESPD-ET-E policy compliance review of all decision documents for delegated programs are addressed within the appropriate subplan. See Appendix A, Table 2 for list of delegated responsibilities.

## **ENCLOSURE 1**

### **QUALITY MANAGEMENT GUIDELINES FOR DAM SAFETY PROGRAM**

#### **1. Purpose**

This enclosure provides specific information on the application of QA/QC to the South Pacific Division dam safety program and all documents related to that program. Although Engineering Division has primary responsibility for this program, Planning and Construction-Operations Divisions also play a significant role.

#### **2. Reference**

- 2.1. ER 1110-1-8, Required Visits to Construction Sites by Design Personnel and CESPD Supplement 1.
- 2.2. ER 1110-1-1801, Construction Foundation Reports.
- 2.3. ER 1110-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures.
- 2.4. ER 1110-2-110, Instrumentation for Safety Evaluation of Civil Works Projects.
- 2.5. ER 1110-2-1150, Engineering and Design for Civil Works Projects.
- 2.6. ER 1110-2-1155, Dam Safety Assurance Program.
- 2.7. ER 11 10-2-1156, Dam Safety - Organization, Responsibilities and Activities.
- 2.8. ER 1110-2-1802, Reporting Earthquake Effects and CESPD Supplement 1.
- 2.9. ER 1110-2-1901, Embankment Criteria and Performance Report.
- 2.10. CESPD R 1110-1-2, Engineering Considerations and Instructions to Field Personnel
- 2.11. CESPD R 1110-1-7, Interagency Cooperation between the U.S. Army Corps of Engineers and State Dam Safety Regulatory Agencies.
- 2.12. CECW-A Memorandum No. 2, Implementation of New Technical and Policy Review Procedures, 14 April 1995.
- 2.13. CECW-EP Memorandum, Engineering, Design and Dam Safety Guidance, 31 May 1995.
- 2.14. ER 1110-2-101, Reporting Evidence of Distress in Civil Works Structures.
- 2.15. EP 1110-2-13, Dam Safety Preparedness.

2.16. CECW-EG, Guidelines for the Use of Technical Experts for the Geologic, Seismologic, Geotechnical and Materials Aspects for Civil Works Projects, 15 August 1997.

### **3. Dam Safety Quality Management Plan**

Each district shall prepare a Quality Management Plan for Dam Safety which will be part of the overall district QMP submitted annually to CESPD for review and approval. The QMP for Dam Safety shall describe district procedures for assuring the quality of products unique to the dam safety program, such as Periodic Inspection reports, Dam Safety Assurance Program reports, Construction Foundation reports, Embankment Criteria and Performance reports, and Instrumentation reports. The QMP shall specify the members of the District Dam Safety Committee.

### **4. Dam Safety Committee**

The MSC Dam Safety Committee (DSC) is responsible for the coordination and implementation of the dam safety program within the MSC, as set forth in reference 2g. The Director of Engineering and Technical Services is the MSC Dam Safety Officer and chairman of the DSC. The DSC will conduct a minimum of two meetings per year, or as needed. In addition, it is the policy within South Pacific Division for the MSC Dam Safety Committee to meet annually with the district Dam Safety Committees. The QA responsibilities of the MSC Dam Safety Committee include:

- 4.1. Ensure that organizational staffing of qualified personnel is sufficient and that the safety program is established and realistically funded.
- 4.2. Establish dam safety related work priorities within the MSC.
- 4.3. Conduct QA activities for all features of major civil works projects.
- 4.4. Monitor activities related to performance monitoring and evaluations of all dams.
- 4.5. Monitor status of Emergency Action Plans.
- 4.6. Monitor the public awareness program and coordinate with state agencies as required.
- 4.7. Ensure that adequate dam safety training is being conducted.
- 4.8. Ensure that accurate data are submitted for the inventory of Corps dams.
- 4.9. Plan, monitor, and conduct dam safety exercises.

### **5. Dam Safety During the Planning Process**

The MSC shall randomly conduct QA reviews of planning documents for projects that include, or might include, dams. These documents include reconnaissance reports and feasibility

reports. The siting of dams is of particular concern during this process, in relationship to earthquake faults and foundation conditions. See Appendix C, Planning Subplan, for details of this review process.

## **6. Dam Safety During the Engineering and Design Process**

The MSC shall randomly conduct QA reviews of engineering and design documents related to dam projects. These documents are described in reference 2e, and include DDRs, plans, specification, cost estimates and Engineering Considerations and Instructions to Field Personnel (reference 2j). See Appendix D, Engineering Subplan, for details of this review process.

## **7. Dam Safety During Construction Process**

The MSC shall conduct QA reviews of the construction process on all dam projects. This will require occasional visits to the construction site by the MSC Dam Safety Committee to assure that the dam under construction is being adequately inspected and tested, that the construction is in accordance with the plans and specifications, and that good construction records are being kept. Reference 2a provides guidelines on appropriate times to visit the construction site. See Appendix F, Construction Subplan, for details. Project specific triads shall be held as explained in reference 2k.

## **8. Dam Safety After The Construction Process**

The safety of a dam after construction depends on periodic inspections and evaluations as described in reference 2c. The scheduling of these inspections, the inspections themselves, and the inspection reports are all the responsibility of the Districts. The MSC, to satisfy its QA mission, shall occasionally participate in the inspections. In accordance with reference 2c, paragraph 5c, as modified by reference 2m, districts will perform technical review of the inspection reports and the MSC will approve the reports. An ITRT review will not be required for periodic inspection reports, but the reports should receive a thorough internal review prior to being forwarded to the MSC for approval.

## **9. Dam Foundation Reports and Embankment Reports**

These reports are prepared by field personnel during construction and shortly after completion of the dam. They are extremely important documents for evaluating the performance of the dam, particularly in addressing any future questions that might arise regarding the safety of the structure. References 2b and 2i indicate that the MSC has approval authority for these documents, however subsequent HQUSACE guidance is that technical review will only be conducted at the district level. These documents, therefore, will be treated in a manner similar to planning and design documents, so a Quality Control Plan (QCP) will be developed for each document. An independent technical review team (ITRT) will be established by the District to review the work.

## **10. Instrumentation Reports**

Reference 2d requires that instrumentation data, along with appropriate written evaluations, be consolidated yearly and sent to the MSC for review. These data and evaluations should receive a thorough independent technical review prior to being sent to the MSC.

## **11. Dam Safety Assurance Program (DSAP) Reports**

Dam Safety Assurance Program (DSAP) reports are reviewed and approved by HQUSACE in accordance with reference 2f. ITR of these documents shall be performed by the district. The MSC will also review selected documents, and attend In Progress Reviews and Technical Review Conferences as part of its QA mission. The MSC should receive information copies of all relevant documents.

## **12. Reporting Earthquake Effects**

The districts' Operations Branch is responsible for the immediate assessment of earthquake damage and notifying the Chief of Engineering Division as required in reference 2h. The Engineering Division will formulate an inspection program, conduct post-earthquake inspections, process and analyze instrumentation data, evaluate the condition of structures, and prepare inspection reports. The district's dam safety QMP will set forth procedures to assure that high quality post-earthquake assessments, inspections, evaluations and reports are obtained.

## **13. Reporting Evidence of Distress**

Evidence of distress at a dam project will be immediately reported to the District Office and up through channels in accordance with reference 2n. If follow-up engineering evaluation reports are necessary or if remedial construction is required, reports and plans should be reviewed by an ITRT.

## **14. Cooperation with Dam Safety Agencies**

The Corps of Engineers and South Pacific Division have a policy of cooperating fully with state dam safety agencies (reference 2k). These state agencies have a QA mission similar to the MSC, with the purpose of assuring that dams constructed within their state are safe. They review dam designs and inspect dams under construction. A dam may not be put into operation until it is certified as safe by the state dam safety agency. In California, the MSC meets regularly with the California Division of Safety of Dams, districts and local sponsors to discuss the safety aspects of dams being planned, designed and constructed by the Corps in that state. The MSC is involved to a lesser degree with state dam safety agencies in Utah, Nevada, Arizona, Colorado and New Mexico.

## **ENCLOSURE 2 IMPLEMENTATION MILESTONES FOR CIVIL WORKS PROJECTS**

### **1. Purpose**

The purpose of this enclosure is to establish a system of major milestones that must be utilized for Civil Works projects in the Pre-Construction Engineering and Design (PED) phase and the Construction General (CG) phase so that product delivery teams, supervisors and their staffs are aware of the milestones and their importance.

### **2. Establishing and Monitoring Milestone Schedules**

Major milestones shall be established for all Civil Works projects in the PED and CG phases and included in the Project Management Plan. Specific milestone objectives shall be tailored to the product and included in the product's Quality Control Plan. The Product Development Team, led by the Project Manager, is responsible for establishing milestone dates and for obtaining concurrence with the dates of Engineering Division branch chiefs and of other functional chiefs involved in product development. Budget constraints and sponsor's desires provided by the Project Manager shall be reflected in the milestone schedule.

### **3. Definitions of the Implementation Milestones**

A brief discussion of each of the milestones and their completion dates are included in the paragraphs below. The limited descriptions provided do not relieve designers and reviewers of the responsibility for complying with all fundamental guidance found in other HQUSACE, CESPD and District ERs in carrying out the activities addressed in these descriptions.

3.1. D1 Design Documentation Report Initiated (400). The results of required design studies and technical analyses not completed during the feasibility stage are presented in a design documentation report (DDR). The date that PPMD authorizes and funds any element of Engineering Division to begin work on the DDR is the date of the completion of this milestone.

3.2. D2 General Design Conference Session. The purpose of the General Design Conference (GDC) is to discuss the current project plan, project background, objectives, schedules, costs, design options, major issues, problem areas, and the type of documents which must be prepared and the level of detail in those documents. The GDC shall be held early in the design stage and may integrated into the Technical Review Strategy Session outlined below. Major topics of discussion will include a description of the authorized plan with appropriate graphics, issues and problem areas, any recommended alternative analyses identified at the time, a list of documents to be prepared, and descriptions of the technical studies and analyses to be accomplished. A site visit should be included as part of the design conference. CESPD and HQUSACE may elect to participate in this activity. The D2 milestone will be achieved on the date that the GDC is successfully completed.

3.3. D3 Technical Review Strategy Session. A Technical Review Strategy Session (TRSS) will be held in accordance with the main body of this QMP. The TRSS may be held concurrently with or shortly after the GDC. The draft QCP for the DDR, embedded within the PMP, shall be discussed and finalized. For multiple feature projects, an additional TRSS shall be held to address each required DDR and associated plans and specifications. This milestone is achieved upon completion of the memorandum documenting the meeting.

3.4. D4 Quality Control Plan - Review and Approval. A Quality Control Plan (QCP) is required for each project as part of the technical review and quality management program of the District. For multiple feature projects, more than one QCP may be prepared addressing the various elements of the project. The milestone will be achieved on the date that the QCP is approved by the Chief, Engineering Division.

3.5. D5 Value Engineering Study Completed. The Corps' current policy requires that value engineering (VE) studies be performed on all USACE projects or project elements with a programmed cost of \$2,000,000 or more unless a determination can be made that a study would not be cost effective. A VE study shall be performed on the earliest document available that satisfies the functional requirements of the project or project element and includes a comprehensive (M-CACES) cost estimate. The milestone is achieved on the date that the VE study is approved by the Chief of Engineering Division.

3.6. D6 Submit Draft DDR for Intermediate Independent Technical Review. A draft DDR shall be submitted to the ITRT Leader for review by the ITRT. Each technical element of the Product Development Team shall also provide a synopsis of remaining work. This milestone will be completed when the ITRT Leader receives the draft documentation. This milestone may be omitted if the omission is addressed in the QCP or with written approval by the Chief, Engineering Division.

3.7. D7 Submit Near-Final DDR for Independent Technical Review. Independent technical review of the DDR shall be conducted in accordance with guidance in the main body of this QMP. The DDR shall be essentially complete before the Near-Final Document Review is undertaken. The document shall be reviewed for scope, adequate level of detail, compliance with guidelines and policy, consistency, accuracy, and comprehensiveness. This milestone is met when the ITRT Leader receives the draft documentation.

3.8. D8 Local Sponsor Review Completed. At the same time that the Independent Technical Review Team begins their review of the "near-final" materials, a copy of those materials shall be sent by the design team's Project Manager to the local sponsor for formal review and comment. The local sponsor is expected to provide formal written comments on the DDR. Each one of the local sponsor's comments will be answered. The date of the letter signed by the Chief of Engineering Division that transmits the responses to the local sponsor's comments is the date of achievement of this milestone.

3.9. D9 Quality Control Certification. When the Near-Final review has been completed, review comments have been documented, and all comments and issues have been resolved, the documentation of the independent technical review and other quality control processes

prescribed in the QCP shall be made a part of the official project files. The Chief of Engineering Division shall recommend to the District Commander (DE) that the DE certify that the quality control process for the DDR has been completed and that all identified technical issues have been resolved. This certification shall be in accordance with the guidance provided in the main body and Appendix D of this QMP. The date of the certification memorandum signed by the District Commander is the milestone completion date.

3.10. D10 Design Documentation Report Approval (480). After the Design Documentation Report has been finalized, a DDR approval memorandum shall be signed by the Chief of Engineering Division. The date that this memorandum is signed is the date that this milestone has been achieved.

3.11. P1 Plans and Specifications (P&S) Initiated (500). P&S shall be prepared in accordance with established HQUSACE and CESPD guidance. They should contain all the necessary information required to bid and construct the plan detailed in the Feasibility Report engineering appendix or in the Design Documentation Report. The date that PPMD authorizes and funds any element of Engineering Division to begin work on the P&S is the date of the completion of this milestone.

3.12. P2 Design Coordination Meeting. A design coordination meeting will be conducted at the initiation of plans and specifications preparation. The local sponsor shall be invited to send representatives to this meeting. The design team and Architect-Engineer (A-E) staff, if applicable, will also attend. The milestone will be achieved upon successful completion of the meeting.

3.13. P3 Technical Review Strategy Session Meeting. A Technical Review Strategy Session (TRSS) will be held in accordance with the guidance provided in the main body of this QMP. The QCP embedded within the PMP shall be reviewed and revised as required. This milestone is achieved upon completion of the memorandum documenting the meeting.

3.14. P4 Quality Control Plan - Review and Approval. A Quality Control Plan (QCP) is required for each set of P&S as part of the technical review and quality management program of the District. If the QCP for the DDR addressed the plans and specifications, a separate QCP will not be required and the milestone will have been met. If the DDR QCP did not address the plans and specifications, a separate QCP shall be required. If the DDR QCP addressed the plans and specifications, but conditions have changed so that the DDR QCP no longer accurately reflects the QCP for the plans and specifications, a supplement to the DDR QCP shall be prepared to reflect current conditions. The milestone will be achieved on the date that the letter is signed by the Chief, Engineering Division

3.15. P5 Submit Draft Plans and Specifications (P&S) for Intermediate Independent Technical Review. Draft P&S containing the material established in the TRSS milestone (P3) memorandum shall be submitted to the ITRT Leader for review by the ITRT. Each technical element of the Product Development Team shall also provide a brief synopsis of remaining work. This milestone will be completed when the ITRT Leader receives the draft

documentation. The Intermediate Review may be omitted if the omission is addressed in the QCP or with written approval by the Chief, Engineering Division.

3.16. P6 Submit Near-Final P&S for Independent Technical Review. The P&S will be essentially complete before the Near-Final Document review is undertaken. The products shall be reviewed for scope, adequate level of detail, compliance with guidelines and policy, consistency, accuracy, and comprehensiveness. This milestone will be completed when the ITRT Leader receives the draft documentation.

3.17. P7 Biddability, Constructibility, Operability (BCO) and Environmental Review Conference. Upon completion of the independent technical review of the Near-Final P&S by the ITRT and the BCOE review by Construction-Operations Division and Planning Division, a BCOE conference shall be held to discuss and resolve the comments in accordance with ER 415-1-11. This milestone is completed when the meeting has been held.

3.18. P8 Final Local Sponsor Review Meeting. Local sponsor involvement is encouraged during the preparation of P&S. After formal local sponsor review comments have been received and addressed, a meeting will be held with the local sponsor to discuss the review comments to ensure that there is a complete understanding of the comments and that the appropriate corrections and modifications have been or will be made. If ongoing coordination during the design has resulted in agreement on local sponsor comments, this meeting may not be necessary and may be canceled at the request of the local sponsor. This milestone is achieved upon successful completion of this meeting.

3.19. P9 BCOE Review Certification (580). Upon completion of the BCOE backcheck, a certification will be signed by the Chief of Engineering Division and the Chief of Construction-Operations Division and sent to the Chief of Contracting Division. The date of certification by the Chief, Construction-Operations Division is the date of achievement of this milestone.

3.20. P10 Quality Control Certification. When the Near-Final Document Review has been completed, final review comments have been documented, and all comments and issues have been resolved, the documentation of the independent technical review and other quality control processes prescribed in the QCP shall be made a part of the official project files. The Chief of Engineering Division shall recommend to the District Commander (DE) that the DE certify that the quality control process for the P&S has been completed and that all identified technical issues have been resolved. This certification shall be in accordance with the main body and Appendix D of this QMP. The date of the certification memorandum signed by the District Commander is the milestone completion date.

3.21. P11 Plans and Specifications Approval (590) (CMR). After the P&S have been finalized and the District Commander has signed the certification of quality control, the cover sheet of the plans will be signed by the Chief of Engineering Division certifying approval of the entire set of plans and specifications. The date that the plans are signed is the date that this milestone has been achieved.

3.22. C1 Pre-Advertise Contract in Commerce Business Daily. An announcement that an Invitation for Bids (IFB) for a construction contract is about to be issued must be advertised in the Commerce Business Daily newspaper 15 calendar days prior to issuing the IFB. The FAR requires that an additional 10 calendar days be allowed for the mailing and processing of the announcement for a minimum total of 25 calendar days to complete the announcement. Typically an additional 5 days is programmed by the District for a total of 30 days for the process. This milestone is met on the day that the announcement is mailed to the CBD.

3.23. C2 Construction Contract Advertised (950). This milestone is met on the day that the initial complete set of plans and specifications is first made available to prospective bidders.

3.24. C3 Government Estimate. The Government estimate is based on final plans and specifications and is the formal, approved construction cost estimate prepared to support contract award. A Government estimate is required for all contracts, or modifications exceeding \$25,000 (FAR 36.203 and ref 1.g.). When the Government Estimate has been approved by the Chief of Engineering Division (ref 1.g., Appendix C), this milestone has been achieved.

3.25. C4 Bid Opening (951). IFB's for construction contracts must be advertised for no less than 30 days. Sealed bids are opened by the Contracting Division. Bid opening is held no sooner than 10 days after all significant amendments to the Plans and Specifications have been issued. The day that the bids are opened is the day that this milestone is achieved.

3.26. C5 Engineering Considerations and Instructions to Field Personnel Report. In preparation for the beginning of each major construction contract, the Project Engineer will prepare a report outlining the engineering considerations and providing instructions for field personnel to aid them in the supervision and inspection of the contract. The requirement for and a discussion of the contents of the report is contained in section 11.o. of ER 1110-2-250. A suggested outline of such a report for a dam is presented in ER 1110-2-1150. The report will normally be provided to the Resident Engineer well in advance of award. The milestone is completed on the date that the transmittal letter is signed by the Chief of Engineering Division.

3.27. C6 Construction Contract Awarded (960)(CMR). Contracts are awarded by the Contracting Division after analysis and recommendations from the Construction-Operations Division and Programs and Project Management Division. Engineering Division is sometimes consulted on contract awards, especially if there is a large difference between the low bid price and the Government Estimate. This milestone is very important to Engineering Division because it is a CMR indicator for Engineering Division. The date of this milestone is the date of the letter awarding the contract.

3.28. C7 Final O&M Manual Transferred to Local Sponsor (981). The O&M Manual and the Water Control Manual, if applicable, are the responsibility of the Engineering Division. The manuals will be completed and fully coordinated with the local sponsor during the construction phase of the project. In addition, if required by the site conditions, a HTRW documentation report will be prepared during construction and will serve as a permanent record of all HTRW-related activities at the project. A copy of this report will also be provided to the local sponsor.

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This milestone is met when the final version of the required manuals and HTRW documentation report have been sent to the sponsor.

3.29. C8 As-Built Drawings Transferred to Local Sponsor (982). As-built drawings will be prepared and maintained by Construction-Operations Division. Using a set of marked-up drawings prepared by the Resident Engineer and the contractor, the Project Engineer will ensure the completion of as-built drawings. Copy of as-built drawings shall be forwarded to Engineering Division. This milestone is met when the as-built drawings have been sent to the sponsor.

**ENCLOSURE 3**  
**QUALITY MANAGEMENT GUIDELINES**  
**FOR**  
**HAZARDOUS TOXIC RADIOACTIVE WASTE (HTRW) PROGRAMS**  
**AND**  
**CHEMICAL DATA QUALITY MANAGEMENT (CDQM)**

**1. Overview**

1.1. Purpose: Provide guidance on quality management of CESPD and its Districts' HTRW (sometimes also known as environmental engineering) programs and CDQM.

1.1.1. CEMP-RT Memorandum, Subject: Technical roles and Responsibilities for the USACE Hazardous, Toxic, and Radioactive Waste (HTRW) Program, dated 24 July 1996 mandates that the HTRW quality assurance (QA) role of the major Subordinate Command (MSC) is to assure that the established QA processes are implemented. This Memorandum itemizes the roles and responsibilities of the functionaries in the HTRW program. Quality Umbrella Assurance Diagnostics (QUADs) protocol presented during the 2nd Annual HTRW QA Workshop in March 1997 provided additional guidance on the MSCs' QA roles and responsibilities, and which was reinforced during the 3rd Annual HTRW QA Workshop in March 1998.

1.1.2. Engineering Regulation 1110-1-263, Appendix C-1, states that the primary purpose of Chemical Data Quality Management (CDQM) for HTRW remedial activities is to ensure that all chemistry data are of known quality and can withstand scientific and legal challenge relative to the use for which the data are obtained.

1.2. Applicability: This guidance applies to HTRW programs within CESPD and its districts, and to all elements within CESPD and its districts having responsibilities for execution of HTRW programs. These elements include those within the Directorate of Engineering and Technical Services and the Directorate of Program Management. HTRW programs include CERCLA, RCRA, WFO, SFO, FUDS, and Army ER.

1.3. References:

1.3.1. EPA QA/R-2, Interim Draft Requirements for Quality Management Plans.

1.3.2. ER 5-1-10, Corps-wide Areas of Work Responsibility.

1.3.3. ER 5-1-11, Program and Project Management.

1.3.4. ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OEW) Activities.

1.3.5. ER 715-1-20, Architect-Engineer Contracting.

1.3.6. ER 1110-1-12, Engineering and Design Quality Management.

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1.3.7. ER 1110-1-263, Engineering and Design, Chemical data Quality Management for HTRW Remedial Activities.

1.3.8. ER 1180-1-6, Construction Quality Management.

1.3.9. EM 200-1-1, Environmental Quality, Validation of Analytical Chemistry Laboratories.

1.3.10. EM 200-1-2, Guidance for HTRW Data Quality Design.

1.3.11. EM 200-1-3, Requirements for the Preparation of Sampling and Analysis Plans.

1.3.12. EM 200-1-6, Environmental Quality, Engineering and Design, Chemical Data Quality Assurance, Guidance for Hazardous, Toxic, and Radioactive Waste (HTRW) Sites.

1.3.13. EM 385-1-1, Safety and Health Requirements Manual.

1.3.14. EC 15-1-16, Information Resources Management (IRM) Committees.

1.3.15. CEMP-RT, Memorandum, dated 24 July 1996, subject: Technical Roles and Responsibilities for USACE Hazardous, Toxic, and Radioactive Waste (HTRW) Program.

1.3.16. ER 1110-1-8100, Engineering & Design Laboratory Investigation and Testing.

1.3.17. EM 200-1-4, Environmental Quality, Risk Assessment Handbook Human Health Evaluation, Volume 1: Human Health Evaluation. CEMRO-HX-S Memorandum, subject: HTRW-CX Technical Review Process.

1.3.18. ER 1110-1-8100, Laboratory Investigations and Testing

1.4. CESPD's HTRW and CDQM QA Oversight Activities: CESPD shall utilize a modified version of CEMP-RT's HTRW Quality Umbrella Assurance Diagnostics (QUADs) program to execute its HTRW and CDQM QA oversight activities. The hierarchical components of QUADs are:

- Quality Assurance Manager (QAM) - CEMP-RT
- Quality Control Verification (QCV) - Chief, CEMP-RT
- Technical Liaison Manager (TLM) - HTRW-CX
- Technical Branch Chiefs - HTRW-CX
- Quality Control Verification (QCV) - Director, HTRW-CX - Chief, HTRW-HX-S
- Quality Assurance Coordinator (QAC) - CESPD-PM
- HTRW-Design Districts
- Non-HTRW-Design Districts.

QA responsibilities and logistics of the QUADs members are specified in the Table below.

**TABLE 1**  
**RESPONSIBILITIES OF QUAD MEMBERS**

<b>QUADs Components</b>	<b>Function</b>	<b>Funding Source</b>
Quality Assurance Manager (QAM) - CEMP-RT	<ul style="list-style-type: none"> <li>- Participate in each QA oversight visit</li> <li>- Monitor the QA Process nation-wide</li> <li>- Provide periodic updates on QUADs activities to USACE senior management</li> <li>- Interphase with HQ USEAP on regulatory QA requirements.</li> </ul>	CEMP
Quality Control Verification (QCV) - Chief, CEMP-RT	<ul style="list-style-type: none"> <li>- Verification of the QUADs process via oversight visit(s) at the selected MSC.</li> </ul>	CEMP
Technical Liaison Manager (TLM) - HTRW-CX	<ul style="list-style-type: none"> <li>- HTRW-CX serves as the coordinating agency for the QA oversight visits.</li> <li>- TLM assigned to support the Design Districts(s) serves as the project officer for each Division QUADs oversight visit.</li> <li>- TLM is responsible for coordination of the QUADs process with the MSC QA Officer.</li> <li>- TLM will select the projects to be observed and lead the oversight visit &amp; prepare a report of the QA oversight findings.</li> <li>- Ideally the TLM will select projects (Category B) from those which have already undergone technical review by the HTRW-CX staff.</li> </ul>	HTRW-CX
Technical Branch Chiefs - HTRW-CX	<ul style="list-style-type: none"> <li>- Technical branch chiefs assigned to HTRW-CX will develop a formal checklist of items in the technical arenas considered critical to the success of an project which will be used to record evaluation from reviewed projects selected by the TLM for use in the oversight process (Example see Attachment II).</li> </ul>	HTRW-CX
Quality Control Verification (QCV) - Director, HTRW-CX Chief, HTRW-HX-S	<ul style="list-style-type: none"> <li>- Verification of the QUADs process at the selected oversight visits.</li> </ul>	HTRW-CX

**TABLE 1**  
**RESPONSIBILITIES OF QUAD MEMBERS**

<b>QUADs Components</b>	<b>Function</b>	<b>Funding Source</b>
Quality Assurance Coordinator (QAC) - CESPD-PM	<ul style="list-style-type: none"> <li>- Establish, <i>collect and review annually</i> HTRW Quality Management Plans to insure product quality &amp; maintain QA of subordinate HTRW design districts.</li> <li>- Keep senior CESPD management informed about QA issues within the division.</li> <li>- Provide an overview of CESPD's QA program and significant findings from past year at the annual QA Workshop.</li> <li>- Coordinate oversight activities with subordinate HTRW Design and non-HTRW Districts.</li> <li>- Coordinate with CX, Districts during QAM, QCV QA oversight visit at Division.</li> <li>- Monitors any corrective actions required.</li> </ul>	CESPD
HTRW-Design Districts	<ul style="list-style-type: none"> <li>- Perform QA on HTRW projects assigned to geographically supported non-HTRW Design District(s).</li> <li>- Response to requests from the CESPD QA Officer.</li> <li>- <i>Prepare and update annually the District HTRW Quality management Plan.</i></li> <li>- <i>Prepare for and present CDQM data on selected CEMP at tri-annual CDQM audit.</i></li> <li>- <i>Prepare for and present Innovative Technology data to CEMP at bi-annual Innovative Technology audit.</i></li> </ul>	CEMP / CESPD  Design District
Non-HTRW-Design Districts	<ul style="list-style-type: none"> <li>- Response to requests from HTRW Design District.</li> </ul>	District

1.5. Overall Strategy for HTRW QA: CESPD's QUADs oversight visits at districts will focus on the Data Quality Objective process and Technical Project Planning for HTRW Data Quality Design.

1.6. Division QA Activities on Chemical Data Quality Management:

1.6.1. CESPD personnel or TLM-CX may participate in Counterpart Consultation/In-Process Conferences with the HTRW Design District to facilitate resolution of technical issues with HTRW-CX and HTRW policy issues with HQUSACE.

1.6.2. Conduct technical evaluation of technology transfer and innovation based on the criteria of:

- Regulatory requirement – Essential
- Added value - Important
- Nice to have

1.6.3. Participation of an individual from CESPD on a product's technical review team would compromise that individual's ability to perform QA on that product. Such double duty is prohibited. No individual is permitted to perform QA functions on a product that he/she was involved in producing.

1.6.4. Identify, inventory and monitoring the submission of Category B project documents required for HTRW-CX review per reference 1.3.15. Category B projects include the National Priority List (NPL), Base Realignment and Closure (BRAC) projects in the RI/FS phase, and those projects using innovative technology and/or the construction cost is greater than \$5m in the RD/RAC phase.

1.7. QA/QC of Laboratory Investigations and Testing: The responsibilities, policies, procedures for laboratory investigations, materials and chemistry testing and analytical services performed in support of design, construction and operation of Civil Works, Military and Support for Others programs are outlined in reference 1.3.18, above.

1.8. Definitions and Acronyms: Acronyms and definitions in HTRW documents are, at times, equivocal and somewhat confusing. Enclosures 4 and 5 contain definitions and acronyms, respectively extracted from EM 200-1-6, Environmental Quality, Engineering and Design, Chemical Data Quality Assurance, Guidance for Hazardous, Toxic, and Radioactive Waste (HTRW) Site, for consultation.

## **2. Quality System Description**

South Pacific Division (SPD) and its districts develop and implement quality management practices, including quality assurance (QA) for related programs and quality control (QC) for various projects, that ensure that technical products meet the agreed upon requirements of the customer and the appropriate laws, policies, and technical criteria, on schedule and within budget. QA involves those planned and systematic actions necessary to provide adequate confidence that product or service activities are performed satisfactorily and safely. Quality Control (QC) is an integral part of the overall QA functions and is comprised of those actions necessary to control and verify that activities and resulting products or services meet or exceed established requirements. USACE performs both QC and QA activities in the delivery of products and services to our customers and partners.

2.1. Quality Management Plans. SPD and its Districts have established Quality Management Plans prescribing their policies and procedures for the execution of quality management activities. The District QMPs are reviewed and approved by the Division on an annual basis.

2.2. Quality Control Plans. A quality control plan (QCP) is prepared by the Districts for every HTRW product or service and by the A-E contract forces for contracted work. These plans are updated as needed. Contract forces may include other Corps offices, other government agencies, and private industry sources. The QCP includes, at a minimum, (i) a statement of the plan objective, (ii) a statement of the guidelines that are followed for the technical review, (iii) a milestone list and schedule for review activities which integrate the mandated division milestones, (iv) a list of documents to be reviewed by the technical review team, (v) a discussion of proposed deviations from the approved quality management plan, (vi) a description of the resources required to accomplish the activities outlined in the QCP. The cost estimate for conducting the independent technical review is included as a separate line item in the project management plan (PMP).

Routine or minor products may utilize generic QCPs consistent with overall QA/QC roles. Programmatic QCPs may be developed and utilized for major programs with routine projects. Generic and programmatic QCPs include the minimum items listed above. The chief of the functional elements having overall responsibility for a product or service is responsible for development of the QCP with input from other functional elements involved in development of the product or service. Exceptions to minimum requirements for QCPs are submitted to the District QA officer for approval.

2.3. Quality Assurance Plans. A separate (government) Quality Assurance Plan is developed for contracts administered by the Corps of Engineers, to assure that the contractor's quality control system is functioning as stated. The Quality Assurance Plan includes a Surveillance Plan and outlines testing frequencies for engineering, construction, and analytical products and services.

2.4. Independent Technical Review. A key to the successful execution of the quality control process for products and services is the independent technical review or assessment of a product. This review is accomplished by an independent technical review team (ITRT) composed of individuals having expertise in disciplines involved in the type of product being developed and reviewed, and who were not involved in development or supervision of the development of the product. Typically, ITRT members are identified in the QCP. Five review options are available to Districts for conducting independent technical reviews. The reviews are conducted (i) within the District, (ii) by another District, (iii) in Centers of Expertise (CX), (iv) by teams or individuals throughout USACE, or (v) by a contract team or consultant. For complex projects, technical experts or consultant review is sometimes needed in addition to normal review. Independent technical review does not replace the need for and conduct of design checks or supervisory review of products. Sufficient time and resources are allocated to this process commensurate with the risk and complexity of the technical product. Review comments are to be constructive in nature, relevant to the product and contain the following elements: (1) A clear statement of the concern; (2) The basis of the concern; (3) The significance of the concern; and (4) The specific actions needed to resolve the concern. The ITRT leader shall

review the products and ITRT comments and product development team responses to identify any outstanding disagreements between members of the product development team and the ITRT. Disagreements are brought to the attention of the appropriate functional chief to facilitate resolution. If the interaction does not resolve the issue, the functional chief makes the final decision. Issues resulting from independent technical reviews are to be resolved at the District level, with assistance of SPD, HTRW-CX, OE-CX, and HQUSACE as needed. As policy issues develop, if it is necessary to seek guidance from HQUSACE it is obtained through the functional program manager's coordination. The District is responsible for the technical and policy content of all documents produced within the District. The technical review team documents technical issues and concerns raised during the technical review process and also documents the resolution of these issues and concerns.

2.5. Project Management Plan (PMP). Each project is managed in accordance with a project management plan. This project management plan is developed by the PM with the customer and the other project delivery team members. The PMP is developed and maintained at a level of detail commensurate with the size and complexity of the project. It is a living, working level document that records the history, documents commitments by SPD, the District, and the customer, and depicts the future direction of the project. A properly prepared PMP is a binding agreement among all elements supporting the project that details how the work is executed and how resources are expended. It defines the quality requirements, baseline scope, schedule, and resources, including contingencies, for the project. The schedule and funding levels are to be realistic and reflect overall program and budget constraints and realities. It considers all project requirements including real estate, planning, design, engineering, construction, environmental, operations, and other types of work whether performed by SPD districts, the customer, or by contract (or). The Project Review Board (PRB) approves the plan and all subsequent changes that are beyond the PM's delegated authority.

2.5.1. The controls and quality requirements placed on the management of each project are consistent with the risks (sensitivity, complexity, uncertainty, etc.) associated with that project and tailored to meet customer requirements consistent with national priorities and policies.

2.5.2. All projects are periodically evaluated by the project delivery team against the baseline requirements (quality, scope, schedule and cost) established in the project management plan. The PM has the responsibility to challenge work in progress, identify variances and evaluate alternatives. The project delivery team's focus for meeting project execution goals is to maintain the baseline requirements in the project management plan. Controls are in place to facilitate timely corrective actions to ensure that changes do not exceed performance thresholds or limitations established by laws, policy or regulations. All changes within project resource requirements defined in the management plan are approved by the PM. The PM has the primary responsibility for fiscal integrity and authority to control project funds to ensure they are used appropriately and in accordance with the project management plan. The PM, in coordination with appropriate functional elements, is also responsible for taking prompt action to correct problems identified by internal and external evaluations.

2.6. Review and Assessment SPD reviews and approves each of its Districts' QMP and generic QCP at least annually for compliance with Division (USACE) standards and continuous

improvement updates. The HTRW-CX, when requested, provides technical assistance for issues relating to the Districts' QCPs for products and services. Quality management (assurance) reviews for selected District products and services are conducted annually by multi-disciplined Division Teams.

Project/Program Review Board (PRB) meetings are held periodically at the Division and Districts to keep senior management informed of progress, resolve issues, and assess performance. PRBs comprise the Commander and his or her designated senior staff members. Customers may participate in PRB meetings as deemed appropriate by the Commander. Evaluating project performance produces opportunities to further improve Corps business processes, in terms of execution, productivity, cost effectiveness, streamlined processes, timeliness, quality standards, and customer service. Project experiences, including success stories, are documented by the PM and the project delivery team to share lessons learned throughout the Corps.

SPD will periodically review its own as well as the executing organizations' implementation of the USACE PMBP to evaluate the effectiveness of their quality assurance, efficiency, and execution. Executing organizations (i.e., districts, field operating activities (FOAs), laboratories, etc.) shall periodically assess their project and program management processes and practices to ensure effective implementation of the plan requirements.

2.7. Data Quality Objectives (DQOs). USACE uses Data Quality Objectives (DQOs) to formally document the desired sampling and analysis activities. DQOs are developed using the Technical Planning Process (TPP) as discussed in Section 7.2. The TPP developed DQOs address all of the elements in the EPA 7-Step DQO process and meets the American National Standard E-4 for planning the collection and evaluation of environmental data (ANSI/ASQC 1994).

2.8. Data Quality Assessment. Data Quality Assessment is accomplished by two primary reports, the Chemical Data Quality Assessment Report (CDQAR) and the Chemical Quality Assurance Report (CQAR), or their equivalents as described in ER 1110-1-263 (ref. 1.3.7.). The CQAR is based, mostly, on the QA sample (sent to a laboratory other than the primary laboratory) data, appropriate field and QC data, and Chain of Custody information. The CDQAR is based primarily on field and QC data (including duplicates), laboratory control samples, and various spiked matrix samples. The data are also checked against the DQOs for usability. Additional details are discussed in Sections 8 and 9.

### **3. Personnel Qualifications and Training**

3.1. Personnel Staffing Requirements A prerequisite for the production of a quality product or service is to ensure that personnel working on the project have adequate technical skills to do the work. All personnel selected to work on environmental programs are qualified to perform assigned tasks in accordance with requirements. It is imperative that District staffing levels include sufficient senior professionals to perform current work and provide appropriate on-the-job training of junior staff members. An adequate staff of junior members is to ensure continuation of the District's institutional and technical knowledge.

3.2. Short Term Training. It is the policy of the Corps of Engineers to provide appropriate training and development opportunities to assure maximum efficiency of civilian members in the performance of their official duties. Training needs are reviewed, and effective training practices and techniques applied in efforts to raise individual performance and to meet present and anticipated needs for individual knowledge, skills and abilities. The Corps has developed a wide array of HTRW courses and workshops tailored to the environmental mission needs

3.3. Long Term Training. To keep the Corps abreast of managerial, technical, and scientific advancements, some members may need training opportunities beyond the customary short-term programs. A variety of long-term training opportunities are provided by DOD, HQDA, HQUSACE and local activities.

3.4. Resource Sharing. The development of new technologies, criteria, and methods also requires a minimum technical expertise level for each discipline, depending on the extent and nature of product, service, or project accomplished by in-house personnel. Utilization of these District specialists Division-wide or as instructors in Corps sponsored short courses is often employed to improve SPD capabilities. The Directorate of Engineering and Technical Services Division at SPD identifies HQUSACE mandatory specialist requirements and evaluates them against their respective District staffing; canvasses the respective Districts annually to identify professional experience levels by discipline, specialty area, and technical expertise; and evaluates these experience levels against the quality and review of the products being produced. Any additional training requirements are to be done either by Division or District personnel, as practical.

3.5. Individual Development Plans. It is the objective of SPD to promote the retention/development of technical expertise of District and Division engineering staffs by encouraging developmental assignments, quality training, professional registration, participation in technical societies and conferences, etc

#### **4. Procurement of Items and Services**

The policy of the Corps is to deliver excellent engineering and design services and products to customers on schedule and within budget. The procurement process in the Corps is governed by the Federal Acquisitions Regulations (FAR), the Defense Federal Acquisition Regulation Supplement (DFARS), the Army Federal Acquisition Regulation Supplement (AFARS), and the Engineer Federal Acquisition Regulation Supplement (EFARS). The principles of customer focused environment, continuous process improvement, and empowerment of people and other tools in ER 1110-1-12 (ref. 1.3.6.) that are used to improve quality of in-house services also contribute to improving the quality of products and services achieved through contracts. For products developed either wholly or partially by a contractor, development and execution of a QCP for the contractor product is the responsibility of the contractor. An overall quality assurance plan is developed for quality assurance activities by the District for overseeing the contractor's quality control activities. The PM is to discuss with the customer the acquisition process and various options to ensure that customer and project needs are met.

4.1. A-E Contracts. Architect–Engineer contracts are used to perform professional engineering, architectural, and surveying services. They are typically used to perform remedial investigation/feasibility study work and remedial designs. Most environmental work is performed as task orders under indefinite delivery/indefinite quantity (ID/IQ) contracts (described in section 4.2.3.).

4.1.1. Procurement Process. The procedures for contracting for architect and engineer services are in accordance with the Brooks Architect Engineer Act. The guidance and purpose are intended to promote fair, efficient and consistent A-E contracting practices throughout USACE. Commanders regularly evaluate the A-E contracting process in their commands to ensure compliance with all applicable procurement laws and regulations in the most efficient and effective manner. HQUSACE elements identify and implement regulatory and procedural changes to improve the A-E contracting process throughout USACE and effectively implement new laws and procurement regulations. Periodic Quality Management Reviews, staff assistance visits, special reports, informal coordination, conferences and other appropriate methods are used to monitor the compliance of the USACE commands with the contracting regulations.

Proposed contracts for A-E services are negotiated contracts structured to maximize competition, provide contract opportunities for many firms, and maximize small business and small disadvantaged business participation while satisfying the needs of the Government in the most effective, economical, and timely manner. Public announcements for A-E services reflect the minimum needs of the Government, not arbitrarily restricting eligible firms, and describe the specific work required in sufficient detail to facilitate a meaningful selection of the most highly qualified firm.

4.2. Remediation and Construction Contracts. The very nature of remediation not only creates the need for more innovative methods for cleaning up hazardous sites, but also requires innovative types of contracts to accomplish cleanup missions. This section will summarize the various contracts used by the USACE for remediation services and present an overview of their advantages over traditional contracting methods.

It is the policy of the Corps of Engineers to maximize use of sealed bid procedures for execution of its contracts. The policy is in accordance with 10 U.S.C. 2304 (a) and FAR 36.103. Most construction contracts follow the typical sequence of completion of design before initiation of construction. Most of these same contracts are executed by sealed bid procedures and awarded as a firm-fixed price (FFP) contract.

However, remediation activities typically include many unknowns, and do not always involve construction. Many consist of excavation and treatment or excavation and disposal. Most criteria are performance based and involve subsurface conditions, quantities, and concentrations that are difficult to define. For this reason, other forms of contracts are commonly used to achieve environmental restoration. Any contract type other than an Invitation for Bid (IFB) is negotiated. Negotiated contracts can be either cost-reimbursable or firm fixed price. Some contracts are specific to the job, others are indefinite delivery/indefinite quantity

(ID/IQ) with the flexibility to issue task orders specific to the job. These features are described below:

## **5. Documents and Records**

Proper documentation is another key component of an effective quality control process. Significant comments, issues, and decisions are recorded and the entire process leaves a clear audit trail. The documentation of the independent technical review and other quality control processes prescribed in a product's QCP is included with the submission of a specific product to the HTRW CX. For those products that the function chiefs transmit to their respective division, the function chief shall certify that the quality control process for that product has been completed and that all technical issues that have been identified have been resolved. For those products that the District Commanders transmit to the division or to headquarters, both the chief of the functional element responsible for the product and the District Commander shall sign the certification. Copies of the certification and accompanying documentation are included in the District project files. Chemical Quality Assurance Reports and Chemical Data Quality Assessment Reports from all projects are monitored by the HTRW Center of Expertise (CX). The CX reviews 10% of these reports and also receives an electronic version of each report that facilitates archival maintenance of these documents.

5.1. Record Keeping Procedures. In order to identify and retrieve environmental records, SF135s boxes and labels are clearly marked to reflect the name of the environmental program such as Superfund, and contain a statement that reads "DO NOT DESTROY" based on the continued moratorium on destruction of environmental restoration records in effect since 1991. The documentation describes the records in sufficient detail to permit quick retrieval when needed.

5.2. Functional Proponents For Superfund Records. The functional proponents responsible for safeguarding records in support of remedial design and remedial action for the Defense Environmental Restoration Program (DERP) are given below. USACE uses these guidelines to ensure consistent maintenance of all applicable documents for EPA projects. Details will depend upon the specific Program and project needs. The standard may be relaxed or tightened in consultation with the customer and in keeping with reasonable project requirements.

5.2.1. Roles And Responsibilities. The following functional proponents have been identified as the "Office of Record" for Superfund records as implemented throughout USACE. The functional proponents are responsible for creating, filing, identifying, and maintaining the records required supporting the documentation and costing recovery effort required by the Superfund Amendments and Reauthorization Act (SARA).

This is not an all-inclusive list and other documents critical to support cost recovery may be included. Anything maintained in these files is subject to full disclosure in a court of law. Any memo or telephone record that represents a personal opinion of an event, person, or thing is removed from the file before they are sent to a records holding area. Records, such as contracts and invoices, do not need to be permanently stored in the technical files. The District

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Contract Office has responsibility of maintaining the contract files for a particular site and the District Resource Management Office has responsibility for maintaining invoices and receiving reports.

To the greatest extent possible progress reports and correspondence are filed in chronological order. When these files are no longer needed to support a particular phase the files can be transferred to a records holding area and retrieved if needed.

Working Files - Records used in the process of design or construction as working files need to be identified as working files. At the end of an identified period, these files can be purged of duplicative material. The identified functional proponents have the responsibility to safeguard permanent files for record retention (as outlined below).

#### 5.2.1.1. Functional Proponent Outline.

##### **A. Project Management Division (Files):**

A record of all the Project Managers assigned to a particular project during its life is created and maintained. This record will consist of:

- Project Manager and the period of time he or she worked on the project
- Forwarding Addresses of project managers if departed from the organization
- Project Management Plan
- Project Budget and Schedules
- Monthly Progress Reports
- Internal and external correspondence relating to the site.

##### **B. Engineering Division (may be combined with other Divisions):**

Pre-Design / Design documents

Plans and Specs

AS Builts

Environmental Assessment

QA reports for chemical testing

Meeting minutes with the RD contractor

Contractor evaluation reports

Trip reports

Cost estimates

Site Specific Safety and Health Plan

Meeting minutes and correspondence with state and local regulators

##### **C. Value Engineering (may be located in Engineering or Construction Division):**

Results and recommendations of VE studies.

##### **D. Construction (if/when items are applicable) (may be combined with other Divisions):**

Bid ability, Constructibility, Operability, and Environmental Review

Progress Reports

Inspection reports

Monitoring and sampling data  
Field logs  
Internal and external correspondence  
Minutes of any coordination or public participation meetings  
Quality Assurance Plan  
QA reports for chemical testing  
Site Specific Safety and Health Plan  
Notes from meetings with the contractor  
Originals and come back copies of manifests  
Performance Evaluations  
Deliverables required by statements of work with contractors  
Newspaper articles, videos, pictures of the site  
QA reports during the execution phase  
Meeting minutes and correspondence with state and local regulators  
OSHA Monitoring and Sampling Data

**E. Contracting Division:**

Government cost estimates  
Abstracts of bids  
Accepted and unsuccessful bids  
Notices to proceed  
Signed executed contract  
Change orders and modifications  
Start and stop orders  
Contract property accounts  
Wage rate and labor problems  
All other documents determined by the contracting officer as essential for completion of the individual contract.  
Contract correspondence  
Documents relating to the close out of the contract

**F. Real Estate Division:**

Rights of Entry  
Title Search  
Land Grants/Deeds  
Land Lease/Property Purchase

**G. Safety and Occupational Health Office:**

Accident and Investigation Reports for Contractors and Government Employees  
OSHA Violations

#### **H. Resource Management Office:**

The financial records consist of all documents substantiating cost to a project. This is the most critical piece in the documentation process. For a document to be admissible, three conditions are met:

- I. The documents must show the relationship between the cost being incurred and the project Charged;
- II. The documents must be properly authorized by an individual delegated with that Authority;
- III. There must be proof of disbursement.

The migration to Corps of Engineers Financial Management System (CEFMS) does not diminish the Corps responsibility to maintain cost documents generated by Corps of Engineers Management Information System (COEMIS). The following is a list of the different types of cost records for which the Resource Management Office continues to be responsible:

#### **COEMIS Records:**

Interagency Agreements  
Certified labor documents  
Working papers used to establish Overhead, Indirect and Burden rates  
Effective rate computations  
Travel documents to include travel order, reimbursement voucher, traveler receipts, ENG 4480  
Contract pay estimates (ENG 93), certified by the COR and associated ENG 4480s  
Other contractual obligations to include purchase orders, imprest fund vouchers, credit card purchases and associated invoices, receiving reports, and ENG 4480s.  
Motor Vehicle Charges (vehicle logs and distribution vouchers)  
Reproduction costs (DPA print requests and distribution vouchers)  
Laboratory costs (work order and distribution vouchers)  
Cost transfers requests and ENG 4479/ENG 4480 support documents  
Disbursement vouchers to include signatures and check numbers

#### **CEFMS Records:**

Interagency Agreements  
Working papers used to establish Overhead, Indirect and Burden rates if the rates are not computed using the CEFMS Budget Module  
Effective rate computations  
Travel vouchers and supporting documentation including receipts  
Contractor Invoices  
Cost transfer requests

5.3. Technical Guidance Documents. USACE publications are used Corpwide to promulgate directive, administrative, technical, instructional, and other types of information. These publications include Supplements to Department of Army Regulations, Engineering Regulations

(ERs), Engineering Circulars (ECs), Engineering Pamphlets (EP), Engineering Manuals (EM); Office Memorandums (OM), Engineer Technical Letters (ETL), and Miscellaneous Publications such as Charts, Design Guides, ENG Maps, Plans, Posters and a limited number of unnumbered publications (UN).

HQUSACE develops guidance and implementing instructions with technical assistance from the Centers of Expertise and makes this information available to the Divisions and Districts. Most of the publications are coordinated with the Divisions, Districts, and Centers of Expertise prior to finalization and issuance. The use of these standard publications helps to ensure all Corps entities are performing work in a standardized and uniform manner.

## **6. Computer Hardware and Software**

6.1. Organizational Policy. It is the policy of USACE to promote the widest acceptance and broadest perspective in the development of Corps information resources and to assure that data collected, analyzed, processed, and maintained on all automated data processing systems, in support of USACE programs and functions be accurate and of sufficient integrity to support effective quality management as established by USACE Information Resources Management (IRM) Program. USACE activities have a local Information Resources Management Steering Committee (IRMSC) or equivalent.

There is no in-house software development in the environmental programs at this time. All of the programs used are either commercial off the shelf (COTS) software or programs that are made available by the Environmental Protection Agency, the Air Force, the Army, or other agency. COTS software is generally purchased at the request of the customer or because it is widely used by the Corps of Engineers.

Information Management Offices within each Division and District are responsible for validating and approving the requirements for the purchase and maintenance of all hardware and software. They also ensure that applicable Information Resource Management (IRM) requirements and standards are met.

Corporate automation information systems (AIS) for project and financial management are used to manage each project and program. Developing, defending, and maintaining budgetary data and all other information necessary to manage a project is the responsibility of the PM. Supervision of this process, along with development and maintenance of all program data and oversight of the AIS, is the responsibility of the District's Deputy for Programs and Project Management (DPM). The DPM will also supervise the aggregating of program and project data so as to facilitate review and management recommendations by the District/Division senior staff, and informed decision-making by the Commander.

6.1.1. Automated Review Management System. The Automated Review Management System (ARMS) is used to manage design review comments. The use of this system is encouraged on Corps projects but is not mandatory. ARMS provides an effective and economical means of compiling and assembling comments from all reviewing elements, coordinating comments by deleting inappropriate or duplicate comments, and back checking to ensure proper resolution.

At this time, ARMS is the only approved system for automated management of review comments for Corps projects. Dr. Checks is a similar program for managing review comments that is being developed by CERL that is accessed through the Internet. CESWD is evaluating the program for possible use by districts within SWD.

#### 6.1.2. Use of Automated Data Processing Systems.

6.1.2.1. The USACE HTRW Lessons Learned System is a computer-based system that has been designed to facilitate the exchange of information among multidisciplinary USACE elements with execution responsibilities in the Environmental Restoration arena. This system provides a means to identify real or potential problem areas in the HTRW program, collect ideas on solutions to these problems, and to make the information available to all USACE Commands engaged in this work. The system relies primarily on the electronic transfer of data to identify problem areas and collect corresponding ideas and solutions to distribute to system users. The HTRW Center of Expertise (CX) implements and maintains the system. Engineering and construction personnel use personal computers to access the central file.

6.1.2.2. Architect-Engineer Contract Administration Support System (ACASS) is an automated database of A-E qualifications, DOD A-E contract awards, and A-E performance evaluations. It is maintained and operated by the Contracting Division of the Portland District. ACASS is used primarily by DOD agencies but other Federal agencies may transmit evaluations to ACASS and access information in ACASS. ACASS fulfills Federal Acquisition Regulation requirements eliminating the responsibility for individual offices: to maintain files on firms wishing to be considered for Government contracts; classify each firm with respect to location, specialized experience, professional capabilities and capacity; maintain records on contract awards in the past year; maintain performance evaluation files; and distribute performance evaluations to all contracting offices.

6.1.2.3. Construction Contract Appraisal Support System (CCASS) is a centralized and automated database containing performance evaluation information on DOD construction contractors. The standard form SF 1420, Performance Evaluation – Construction Contracts, is electronically transmitted to the CCASS central database, which is maintained in Portland, Oregon in accordance with criteria established in DFARS 236.201. This software program is designed to assist the construction field office in preparing the Standard Form 1420 and electronically distributing the forms to the District office and the centralized database.

6.2. Information Systems Modernization Program (ISMP). The Corps of Engineers has a multi-year management effort underway to replace outmoded software and applications. It is a commitment to improve the business processes and the automation, which are at the heart of our mission. The HQUSACE Information Systems Modernization Program (ISMP) is composed of several systems (described below) including Corps of Engineers Financial Management System (CEFMS), Program and Project Management Information System (PROMIS), and Resident Management System (RMS). The ISMP evaluates all major software systems used by the Corps of Engineers with the goals of: reducing the cost of data collection; verifying and improving processing; reducing the cost of system design, development, and maintenance; and

improving the accuracy, completeness, availability, timeliness, and usefulness of information for operation users and decision makers at all levels and across all functional boundaries.

6.2.1. CEFMS. Corps of Engineers Financial Management System (CEFMS) is the business management system used by all Corps offices. CEFMS allows the Corps to manage their work, resources, and funding more efficiently by replacing multiple systems previously used such as Corps of Engineers Management Information System (COEMIS). The system provides immediate, real-time responses for commitment, obligation, labor, and other transactions. CEFMS also has the capability to generate reports regarding funding expenditures. Electronic signature capability allows managers to convey their approval or authorization quickly and securely. The CEFMS environment has multi-level processing with system to system networking capabilities. The programming and databases are maintained in centralized locations under secure environments. Access to the database information is strictly protected with numerous passwords and other security features.

6.2.2. PROMIS. The Program and Project Management Information System (PROMIS) is the Corps of Engineers standard automated system supporting the business processes of Programs and Project Management. The system consolidates scope, schedule, and costs data provided by the Project Management team to define the total project requirements. This consolidated data is then used as the basis for scope, schedule, and cost negotiations within the Project Management team. PROMIS is designed to be integrated with data residing on other Corps of Engineers Automated Information Systems such as the Corps of Engineers Financial Management System (CEFMS) and Resident Management System (RMS). At present, use of PROMIS within USACE is in the early stages of implementation.

6.2.3. RMS. The Resident Management System (RMS) is an automated construction-management/quality assurance information system that is PC-based, LAN-compatible, and primarily oriented to the daily requirements of USACE field-level construction managers. Its primary features include capabilities to support construction project planning, contract administration, quality assurance, payments, correspondence, submittal management, safety and accident administration, modification processing, and management reporting. RMS is seen as a powerful, automated management tool to increase staff productivity and help ensure construction quality of projects. Upon completion of development, RMS has the capability of communicating with other USACE automated information systems such as PROMIS and CEFMS.

## **7. Project Planning**

The U.S. Army Corps of Engineers' (USACE's) goals for site investigation, remedial design, and remediation are to deliver quality investigation, engineering design, and remediation efforts on schedule and within budget without compromise to health and safety. These goals challenge the Division and Districts to continue striving for better, safer, faster, and cheaper completion of work activities and site closeout.

7.1. Health and Safety. SPD and its Districts and contractors develop Site Safety and Health Plans (SSHPs) on the basis of site conditions to protect personnel involved in site activities and

the surrounding community. The plans address all applicable regulatory requirements in accordance with 29 CFR 1910.120(i)(2) – Occupational Health and Safety Administration, Hazardous Waste Operations and Emergency Response; 29 CFR 1926, OSHA, Safety and Health Regulations for Construction; 29 CFR 1926.65, OSHA, Hazardous Waste Site Operations and Emergency Response; U.S. EPA Occupational Health and Safety Manual; USACE Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste and Ordnance and Explosive Waste Activities, ER 385-1-92 (ref. 1.3.4.); and USACE Safety and Health Requirements Manual, EM 385-1-1 (ref. 1.3.13.). The SSHP provides site background discussions and describes personnel responsibilities, protective equipment, safety and health protocols, decontamination procedures, personnel training, emergency response contingency plan, and type and extent of medical surveillance. Accident prevention plans are also incorporated into the SSHP. The plans identify problems or hazards that may be encountered and how these are to be addressed. Procedures for protecting third parties, such as visitors or the surrounding population, are also provided. The plans are reviewed and approved by the District/project industrial hygienist and District Safety Office. For in-house work, the Safety Office approves the plan. For contractor work, the SSHP is approved by the contractor and accepted by the Contracting Officer's Representative.

7.2. Technical Project Planning Process. USACE has developed a four-phased effort, called Technical Project Planning (TPP) process, to design data collection programs (ref. 1.3.10., EM 200-1-2, Technical Project Planning (TPP) Process). The TPP process ensures efficient progress to site closeout by challenging the project delivery team to do the following:

- Consider all existing environmental data and site information.
- Understand short- and long-term Customer goals.
- Obtain the Regulator's input.
- Recognize applicable regulations and related decisions required for progress to site closeout.
- Identify the environmental data type(s) needed for the site-specific engineering and scientific evaluations.
- Determine the data quantity and quality requirements based solely on the intended data use(s).
- Develop data collection options for the Customer's consideration.
- Focus on site closeout during all project planning and execution efforts.

The technical project planning (TPP) process involves a number of phase-specific activities. The TPP process supports efforts to prepare project specific DQO statements that meet the definition of a DQO as provided in EPA's 7-Step DQO process (EPA QA/G-4). The 7-step DQO process and the TPP process are the planning tools for Environmental sites within EPA's and USACE's quality management systems, respectively. As planning tools, both processes are intended to ensure data are of the type, quantity, and quality needed for decision making at Environmental Restoration sites. The TPP process is a critical component of the USACE quality management system that meets the American National Standard for planning the collection and evaluation of environmental data (ANSI/ASQC E4). E4 is a national consensus standard for

quality systems responsible for environmental data collection and environmental technology programs.

#### 7.2.1. Phase I (Identify Current Project)

Phase I activities bring together decision-makers and technical personnel to determine an overall site approach and identify the current project focus for the specific product, service, or site activities.

#### 7.2.2. Phase II (Determine Data Needs)

Phase II activities offer guidance to assist “Data Users” with the detailed planning required to identify and document data needed for the current project, and subsequent executable stages at the site. Phase II helps Data Users determine the level(s) or categories of acceptable data quality required for the intended purpose or use of every data need. The required quality of analytical data to be collected is dependent on the data use. The two descriptive data categories employed in this process are screening data with definitive confirmation and definitive data (both as defined by EPA).

#### 7.2.3. Phase III (Develop Data Collection Options)

Phase III efforts of “Data Implementers” develop approaches for sampling and analysis activities that will fulfill the data needs of Data Users, within the constraints of the project.

#### 7.2.4. Phase IV (Design Data Collection Program)

Phase IV activities involve selection of data collection components that best meet the goals for the product, service, project, etc. During this phase, the technical planning team prepares a detailed DQO for each data need, and finalizes related work plans or scopes of work.

Some key concepts of the technical project planning process are:

7.2.4.1. Site Closeout. Site closeout is achieving the “walk away goal”, or the final condition of an Environmental Restoration site, as envisioned by the Customer (if there is one), Regulator, and TPP team.

7.2.4.2. Customer’s or Sponsoring Entity’s Goals. Includes identifying, understanding, and communicating the customer’s concept of site closeout and their schedule and budget constraints.

7.2.4.3. TPP Team. Technical project planning teams consist of Decision-Makers, Data Users, Data Implementers, and other project-specific technical specialists needed to achieve the project’s goals.

7.2.4.4. Project Objectives. Project Objectives are the short- and long-term issues to be addressed and resolved at an Environmental Restoration site. Satisfying or resolving the

project objectives and the underlying regulations or site decisions are the purpose of all site activities. Most, but not all, project objectives are consequences of the regulations applicable to the site restoration process.

7.2.4.5. Data User Perspectives. Data users are the technical personnel responsible for engineering and scientific evaluations that are the basis for site decisions. Data users determine the data needed to satisfy project objectives.

7.2.4.6. Data Implementer Perspectives. Data implementers (e.g., chemists, engineers, geologists, scientists, etc.) identify the sampling and analysis methods suitable for satisfying the data needs determined by the Data Users.

7.2.4.7. Data Collection Options. Data collection options are different groups of data needs and their associated sampling and analysis methods. Data collection options provide a simple mechanism to document the “basic” data needed for the current project; “optimum” data that is cost-effective and prudent to collect for future executable stages; and any “excessive” data that others, besides the Data Users, impose or mandate in excess of the data needed by Data Users.

7.2.4.8. Data Quality Objectives (DQOs). “DQOs are qualitative and quantitative statements derived from the DQO process that clarify study or project objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that are used as the basis for establishing the quality and quantity of data needed to support decisions” (EPA QA/G4). DQOs produced as a result of the TPP process meet EPA’s definition (of a DQO). The DQOs documented during the TPP activities are project-specific statements that describe the data needed, the intended uses of the data, and the sampling and analysis methods to achieve acceptable data quality for the intended data uses. When a Data User defines a probabilistic-type of data need, Steps 5 through 7 of EPA’s 7-Step DQO process are used to determine the number of samples required for the intended data uses

## **8. Implementation of Work Processes for Environmental Data Collection and Construction**

### **8.1. Environmental Data Collection.**

8.1.1. Introduction. Execution and implementation of engineering and construction activities of the U.S. Army Corps of Engineers (USACE), including the implementation of our Chemical Data Quality Management (CDQM) program for data collection, in Hazardous, Toxic, and Radioactive Waste contamination related products and services requires the interface and coordination of several USACE personnel. Procedures and responsibilities for USACE staff performing government CDQM activities are defined in this section and detailed in ref. 1.3.12., (EM 200-1-6, Chemical Quality Management for HTRW Projects). Policies, guidance and requirements for geospatial data and systems are defined in ER 1110-1-8156 and EM 1110-1-2909. Geotechnical Data Quality Management guidance is under development and will be contained in an ER upon finalization. Construction activities are discussed briefly (and associated references listed) in some of the sections (8.8.3, 8.10, et al). The respective USACE project

manager (PM) is responsible for initiating and coordinating the defined CDQM activities. The project specific Quality Assurance Project Plan details the chemical data quality management for each project and activities are implemented as described in the plan.

8.1.2. Goals of the CDQM Program. The goals of the USACE CDQM program are to 1) generate data of acceptable quality for the intended use, 2) satisfy the needs of the customer and the regulators, 3) generate sufficient data of known quality on the first attempt, and 4) provide a historical record for potential future use. When CDQM is used properly, the PM can readily measure the success of the project delivery team in meeting the project-specific data quality objectives (DQOs). The USACE CDQM program consists of activities presented in ER 1110-1-263 Chemical Data Quality Management for Hazardous Toxic and Radioactive Waste Remedial Activities (ref. 1.3.7.), Engineer Manual (EM) 200-1-1 Validation of Analytical Chemistry Laboratories (ref. 1.3.9.), EM 200-1-2 Technical Project Planning Guidance for HTRW Data Quality Design (ref. 1.3.10.), and EM 200-1-3 Requirements for the Preparation of Sampling and Analysis Plans (ref. 1.3.11.).

8.1.3. Technical Project Planning. The HTRW Design District (or District to which work is brokered) is responsible for assessment of chemical data quality, including determination of data usability and DQO attainment. The project chemist is a critical team member for this effort, and is involved in preparation and review of project documents including scopes of work, sampling and analysis plans, contract specifications, and final chemical data reports. The project chemist is involved at each step of an environmental restoration project, so that adequate data quality is maintained. The technical project planning process for design of DQOs is discussed in the Project Planning section above and described in detail in EM 200-1-2 (ref. 1.3.10.).

8.1.4. Chemical Data Quality Management (CDQM) Activities. All environmental restoration projects require a comprehensive and multifaceted approach to quality control (QC) and quality assurance (QA) in order to achieve and document attainment of appropriate quality for the intended data usage. The project chemist is the focal point to ensure that chemical data meet data quality objectives for each environmental restoration project. The project chemist has several techniques to monitor and ensure the quality of chemical data. The project chemist in conjunction with the technical project team determines the appropriate level of compliance monitoring as discussed in ER 1110-1-263 (ref. 1.3.7.). This determination is based upon the intended use of the data and the degree of confidence needed in the quality of the data. Monitoring of data quality may consist of a combination of activities. The twelve (12) compliance monitoring activities that the Corps of Engineers apply on a project-specific basis to assist in generating data of known quality are: (1) technical document review; (2) validation of primary and QA laboratories; (3) sample handling quality assurance; (4) quality assurance sample collection and analysis; (5) data review in the form of a CQAR; (6) assessment of data usability in the form of a CDQAR; (7) single- or double-blind performance evaluation sample analysis; (8) review of primary laboratory data; (9) validation of data; (10) field audits; (11) laboratory audits; and (12) tape audits. They are briefly described in some of the ensuing paragraphs and are fully described in EM 200-1-6 (ref. 1.3.12.).

8.2. Technical Document Review. Environmental Restoration/HTRW Project Technical Verification Process. It is the responsibility of the contractor and the District to produce a quality product. Rather than employing multiple levels of detailed document review to ensure quality, the technical verification process transfers project responsibility to the District and its contractors. In general, the HTRW Design District is responsible for a QC review of the prime contractor's Quality Control Plan and all project-specific deliverables. Quality Control Plans, scopes of work, and other project documents completed in-house are reviewed by an independent technical review function established by the Design District. SPD will provide QA oversight of the Districts' QC process. Districts may request HTRW-CX and OE-CX participation in a HTRW Design District's independent technical review process. SPD may request HTRW-CX and OE-CX support in performing QA oversight and audits of the HTRW Design District's QC processes. HTRW-CX review is required on key documents of Category B projects (defined below). The HTRW-CX provides technical assistance and review of any project as requested by the HTRW Design District, MSC, or HQUSACE.

8.2.1. Environmental Restoration/HTRW Project Technical Categories. The HTRW Design District determines the appropriate review process for each environmental restoration project. Category A includes all routine environmental restoration projects, and all projects in the Preliminary Assessment phase and those beyond the Site Inspection (SI) or RCRA Facility Assessment (RFA) phase. Category A excludes, however, National Priorities List (NPL) sites, Base Realignment and Closure (BRAC) sites, sites where innovative technologies are used, and sites with construction estimates greater than \$5 million. Category B projects include all non-routine projects, and any projects of special District, Division, or Headquarters (HQ) concern.

8.2.2. Roles and Responsibilities for Review of Specific Environmental Restoration/HTRW Products. Review responsibilities will vary depending on the category (Category A or Category B) of projects. The HTRW Design District is responsible for review and approval of all projects in Category A. Key documents for projects in Category B are reviewed and approved by the HTRW Design District and reviewed by the HTRW-CX. The PM provides appropriate technical documents to the HTRW-CX for their information or review. Technical review by the HTRW-CX will normally be completed within two weeks for a scope of work and within three weeks for all other documents from time of receipt. If shorter review times are required, the PM coordinates with the technical liaison at the HTRW-CX. Comments from the HTRW-CX are provided to the PM for all projects reviewed. A copy of all review comments and responses is placed in the permanent project file. Districts/centers with insufficient staff resources to provide in-house review rely upon the Design District, the Chemistry Quality Assurance Branch Laboratory (CEERD-EE-Q) or the HTRW-CX for document review. In addition, Chemical Quality Assurance Reports and Chemical Data Quality Assessment Reports (ref. 1.3.12.) for all projects are sent to the HTRW-CX. The HTRW-CX is responsible for review of 10% of reports received. Review summaries of the reports are sent monthly to Headquarters (Military Programs) by the HTRW-CX.

8.3. Validation of Primary and QA Laboratories. In general, commercial and QA laboratories that support the SPD Environmental Restoration programs will obtain a USACE laboratory validation prior to field studies or sample analysis. The QA laboratory is defined as the USACE

validated chemistry laboratory that is responsible for analysis of the project QA samples. For some data uses, other programs (i.e., State Fuel Storage Tank Program, A2LA, NELAP, United States Navy, and United States Air Force Installation Restoration Program Audits) can be utilized. Projects are not to be implemented without laboratory accreditation from some authority. Validation is maintained throughout the duration of the project. The USACE laboratory validation program is project-specific. The validation is a parameter, method, and matrix-specific approval. For each new contract or delivery order awarded during the validation period, a project-specific request for validation is sent to the HTRW-CX for verification of laboratory status regardless of their expiration date on the list of validated laboratories. The primary objectives of the USACE validation program are to communicate to laboratories the USACE QA/QC requirements, verify that the laboratories are performing specified analytical methods, and to ensure that these laboratories meet the USACE requirements prior to sample analysis. Laboratory validations are performed by the HTRW-CX applying guidance outlined in EM 200-1-1. The USACE validation program is primarily based on EPA's SW-846 methods. The first step of the validation program is a paper review of the laboratory's capabilities to ensure that the proposed laboratory has the facility, equipment and personnel to perform the project-required analyses. The laboratory demonstrates capabilities by providing acceptable Standard Operating Procedures (SOP) and successfully analyzing project required performance evaluation samples. The final step of the validation program is an on-site inspection of the laboratory's facility. Validation can be terminated at any step of the process due to inadequate laboratory documentation, performance, and/or execution.

#### 8.4. Sample Quality Assurance.

8.4.1. Sample Handling Quality Assurance. The QA laboratory provides immediate feedback regarding problems with sample shipments. The QA laboratory is responsible for checking the sample shipment for temperature, proper preservatives, correct containers etc. The contract laboratory coordinator, project chemist, or other appropriate technical personnel for the project is then notified within 24 hours regarding the status of the sample shipment via facsimile, electronic mail, or telephone call. For most projects, this is beneficial because problems are detected and resolved while the sampling team is still in the field. This approach reduces re-mobilizations to the field. The CEERD-EE-Q laboratory, contract QA laboratory, and the contract primary laboratory complete and report a "Cooler Receipt Form" for all shipments sent to their respective laboratory. An example cooler receipt form is found in EM 200-1-3. A chain-of-custody record is initiated at the sampling stage and maintained throughout the analysis and reporting stages of the process. Sample reports are easily traceable to chain-of-custody records. All documentation pertaining to sample receipt or analysis is included in the laboratory's data report.

8.4.2. QA Sample Collection and Analysis. QA sample collection and analysis is the main tool to determine that the data generated by primary laboratories is technically valid and of adequate quality for the intended data usage. Based on the needs of the project, a percentage of samples are homogenized (except samples for volatiles testing, which are co-located), split, given unique sample identification, and sent to a primary contract laboratory and to a contract QA chemistry laboratory for analysis. QA sample collection does not have to be performed at the same frequency or rate for all test parameters, on all matrices, during all project phases, nor

for any one type of project. General considerations include: 1) the data use and users as defined by the project-specific DQOs; 2) the total number of samples being generated (e.g., a larger number of total samples collected may lower the percentage of QA samples needed); and 3) the need for statistically significant information from QA sample data. Ideally, the USACE QA sample collection and analysis program is an interactive process whereby the chemistry laboratory in conjunction with the project chemist detects and solves problems as sampling and analysis occurs to ensure that the data generated for the project meets the project DQOs. The "value added" by this program can be divided into two areas, detecting analytical problems and salvaging data usability.

8.4.2.1. Detecting Analytical Problems. A primary function of the CEERD-EE-Q or contract QA laboratory is to analyze samples as prescribed by the project and produce a data package that is reviewed in real-time (at the bench during the time of analysis) for later comparison to the primary laboratory's data. Analysis and comparison of the QA sample data to the primary sample data can reveal problems with primary laboratory data even when all other data quality measurements are in control. A common problem is over-dilution of semi-volatile organic analytes by the contract laboratories. Analysis by the QA laboratory can help in deciding whether this was due to actual matrix effect or due to inadequate sample cleanup by the contract lab.

8.4.2.2. Salvaging Data Usability. When the data comparison shows good correlation between the QA laboratory and primary lab data, this may bolster the credibility and usability of the data generated by the primary laboratory. This is especially true in cases where primary lab data comes under close scrutiny and fails some data quality criteria. Good correlation also reflects consistency in the sampling process, the lack of which can be a major source of error or variation.

8.4.3. Data Review in the form of Chemical Quality Assurance Reports (CQARs). CQARs are prepared by CEERD-EE-Q, contract laboratory coordinator, assigned chemist, or other appropriate personnel. The CQAR documents review of the QA laboratory data and the corresponding primary laboratory data. Data for project samples, QC samples and QA samples are compared, and the impact on the primary laboratory's data is documented.

8.4.4. Assessment of Data Usability in the form of Chemical Data Quality Assessment Reports (CDQARs). The project or assigned chemist prepares CDQARs. The CDQAR documents data usability, DQO attainment, and contract compliance.

8.4.5. Single or Double-Blind Performance Evaluation (PE) Sample Analysis. Another means of testing the analyst's proficiency in identifying and quantifying analytes of interest is the use of single or double blind PE samples. Typically the composition of PE samples is known to the originator, but not to the analyst. In a single blind PE sample, both the originator and the analyst know that the sample is a PE sample. USACE uses single blind PE samples as part of the process to validate laboratories. Double blind PE samples are containerized, labeled, and submitted as project environmental samples. The analyst does not know that the sample is a PE sample; ideally, the PE sample is indistinguishable from the other project samples. The use of double blind PE samples is considered a more effective way of detecting problems, since the

laboratory would not be aware that it was being evaluated. However, it is sometimes difficult to disguise a standard reference sample as a project sample. Performance evaluation sample data are evaluated for compound identification, quantitation, and sample contamination. PE samples are recommended for sites that have the potential for a majority of non-detects, or for sites where the contaminants of concern have already been identified. Currently, the complete ranges of organic and inorganic PE samples are available for water only. Selected organic and inorganic PE samples are available for soil.

**8.4.6. Review of Primary Laboratory Data.** An independent data review of the entire primary data set is performed by the prime contractor for contracted projects. In addition, the project chemist, CEERD-EE-Q chemist, or contract laboratory coordinator (usually a USACE chemist) also reviews a portion of the primary laboratory data. The percentage of primary laboratory data reviewed by the government depends upon the project-specific DQOs. The project chemist, CEERD-EE-Q, or contract laboratory coordinator reviews all the primary laboratory data for in-house projects. Data review is conducted to ensure that: 1) QC data provided in the laboratory deliverables are scientifically sound, appropriate to the method, and completely documented; 2) QC samples are within established guidelines; 3) data were appropriately flagged by the laboratory; 4) documentation of all anomalies in sample preparation and analysis is complete and correct; 5) corrective action forms, if required, are complete; 6) holding times and preservation are documented; 7) data are ready for incorporation into the final report; and 8) data package is complete and ready for data archival.

**8.4.7. Validation of Data.** Data validation is the process of data assessment in accordance with EPA regional or national functional guidelines or project-specific guidelines. Data validation includes assessment of the whole raw data package from the laboratory.

**8.5. Audits.** Audits are performed on an unannounced basis, and are coordinated with government geotechnical personnel, as appropriate. Audits are performed during any stage of the project.

**8.5.1. Field Audit Procedures.** The auditor is responsible for checking that samples are collected and handled in accordance with the approved project plans and for confirming that documentation of work is adequate and complete. Specifically, the auditor ensures that performance of field activities satisfies the project DQOs. Original records generated for all audits are retained within permanent project files. Records may include audit reports, written responses, record of the completed corrective actions, and documents associated with the conduct of audits that support audit findings and corrective actions. Details on contractor quality control of field activities are found in EM 200-1-3. For construction activities, the audit assesses the prime contractor's implementation of the three-phase chemical data control process. Additional information on the three-phase process is found in Corps of Engineers Guide Specifications (CEGS)-01440 and CEGS-01450.

**8.5.2. Personnel.** Trained and experienced personnel perform the field audits. These personnel are knowledgeable in the subjects necessary for assessing the quality of the work being observed, including thorough knowledge of the contractual requirements. Preferably, field audits are carried out by government personnel but they may sometimes be performed by

contract personnel with some objective relationship to the work being conducted in the field (e.g., a prime contractor auditing its subcontractors). A number of training sessions are available (both internal and external to USACE) to provide the needed understanding of the principles and proper execution of the USACE CDQM program. Division and District staff members avail themselves of this training as appropriate.

8.5.3. Desk Audit of Field Activities. Another mechanism for auditing field activities as they occur is to include government technical review of Daily Quality Control Reports and field logs while the contractor is in the field. Desk audits of field activities require that these reports be supplied on a periodic basis (e.g., daily or weekly) to the USACE technical staff. The requirement for periodic reporting is included in the contract specifications or project delivery order, as well as in the project work plans.

8.5.4. Laboratory Audits. The primary and QA chemistry laboratories are responsible for maintaining detailed procedures to support the validity of all analytical work. Laboratory audits may consist of on-site inspections and/or analysis of PE samples. The audit verifies the laboratory's continuing ability to produce acceptable analytical data. These laboratory audits are designed to be project-specific, and may entail a thorough (real-time) review of project chemical data generated by the laboratory. If a performance problem is identified for sample analysis or data reporting, the HTRW-CX reserves the right to audit the laboratory anytime during its 18-month validation. Laboratory audits are carried out on either an announced or unannounced basis.

8.5.5. Tape Audits. The purpose of a raw data review (tape audit) is to assess the quality of the data and to evaluate the overall laboratory performance. This information is then used by the data user to evaluate data quality to make a determination on the acceptability and the usability of the data. The tape audit is designed to independently verify the data reduction practices of an individual laboratory. All of the raw data from a given batch is recalculated by the evaluator and is compared to the results reported by the laboratory. The data quality is measured by laboratory compliance with the required methods and acceptable laboratory practices for analysis and for data reduction. Tape audits can only be performed when a specific analytical instrumental raw data output has been stored electronically. To implement this type of audit the contract requires the laboratory to provide electronic data (*i.e.* magnetic tapes) needed to perform the audit. In addition, a means to read the data and a chemist familiar with both the method and instrument used for data acquisition must be available.

8.5.6. Fraud Deterrence. Although not specifically designed to detect fraud, the USACE QA/QC program of laboratory validation and its maintenance activities, including standard operating procedures review, performance evaluation samples, and on-site inspection of the facility, laboratory data review, and QA sample collection and analysis (the primary laboratory is aware QA samples are being analyzed by a validated QA laboratory), has provided significant assurance and is a deterrent against fraud.

8.6. Primary CDQM Activities. While all twelve of the CDQM activities discussed in the previous sections may be used on a project, six of the twelve are used on most projects. The six primary CDQM activities for USACE HTRW projects are 1) validation of primary and QA laboratories, 2)

technical document review, 3) sample handling quality assurance, 4) QA sample collection and analysis, 5) preparation of Chemical Quality Assurance Reports (CQARs), and 6) preparation of Chemical Data Quality Assessment Reports (CDQARs). These compliance-monitoring procedures are routinely considered as candidates for inclusion in each project's set of CDQM activities.

8.6.1. Documentation of Selected CDQM Activities. The CDQM activities selected for each project are documented in the project-specific DQOs. A recommended procedure for documentation of the CDQM process is presented in American National Standard, Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs (ANSI/ASQC E-4, 1994).

8.6.2. Waiver of CDQM Activities. USACE Environmental Restoration / HTRW policy allows for any aspect of the program to be waived except for the following three requirements: (1) use of the technical project planning process culminating in project-specific DQOs; (2) use of analytical service providers with verifiable quality systems compliant with the principles of International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) Guide 25; and (3) program and project execution in accordance with the requirements of ANSI/ASQC E4 as specified in ER 1110-1-263 Section 8.b (ref. 1.3.7.). ER 1110-1-263 states that all other CDQM elements may be waived for a specific project by the District PM with concurrence from the technical project team as defined in EM 200-1-2 (ref. 1.3.10.). The intent of ER 1110-1-263 is to provide a flexible CDQM program that produces data of known quality to satisfy the project-specific DQOs.

If the project chemist in conjunction with the PM and technical project team decides not to use all of the six primary CDQM elements discussed above, a memorandum for record (MFR) is required. The District PM documents in the MFR what procedures will replace the waived compliance monitoring activity and demonstrate the concurrence of the technical project team including the project chemist. The project chemist will typically be tasked by the PM to prepare this documentation. The MFR includes the PM's signature and the project team's concurrence along with the following elements: 1) brief description of the project; 2) summary of the project objective; 3) description of the waived CDQM activities; and 4) description of alternate procedures to ensure data quality. Districts with insufficient staff chemist resources to provide technical team support rely upon the HTRW Design District, the CEERD-EE-Q professional staff, or the HTRW-CX for chemistry support.

8.7. Use of QA Samples by Project Phase. The use of QA and QC samples is a particularly powerful tool for maintenance of data quality. With primary, QA and QC data for a single sampling point one may perform both inter-laboratory and intra-laboratory data comparisons. In addition, QA samples may provide unique indications about the quality of the primary laboratory's data. The following sections describe the use of QA samples in various project phases.

8.7.1. Investigative Phase. The use of QA samples during the investigative phase adds value by verifying the analytes of concern and quantifying the levels of contamination. In general, QA samples are targeted in locations of known or expected contamination. If the primary and QA

laboratory data are comparable, then this provides an additional level of confidence that the correct action was taken. If the primary laboratory data do not compare well with the associated QA laboratory data, then this causes the data from the site to be more completely evaluated prior to a decision. In addition, the QA laboratory data yields information regarding the spatial heterogeneity of the soil contamination.

8.7.2. Pre-Design Phase. The pre-design phase consists of bench and pilot scale studies. If data generated from these activities are used to size the system, accuracy of results is critical. Any false positive or false negative from the bench or pilot study could result in costly changes following construction of the completed system. QA sample collection provides a verification of the prime contractor's results for use in their design.

8.7.3. Remedial Action Phase. The remedial action phase consists of treatment system analytical support. Verification of results from the actual treatment operations is a critical check for long-term operation of the system. QA samples would be useful during the early stages of the project when the system is optimized or at stages of major equipment changes. Many treatment systems focus on discharge quality and verification of the results aids in the acceptability by the regulators.

8.7.4. Post-Remedial Action Monitoring. The post-remedial action phase typically includes post-excavation confirmation sampling and/or treatment system analytical support. QA sample checks on post-excavation samples can bolster regulator's confidence in the effectiveness of remediation. Analytical support during the operation and maintenance (O&M) phase can last up to 30 years in the case of long-term monitoring. In all likelihood, the primary laboratory would change several times during the course of a long-term monitoring project. Use of the same QA laboratory would be instrumental in providing continuity from one laboratory's results to another and for resolving problems that inevitably arise when a large volume of data is collected over a long period of time.

8.7.5. Omission of QA Samples. For certain projects, QA samples may not be the best method of ensuring attainment of data quality objectives. The decision to omit QA samples for a given project is made by the project chemist in conjunction with the PM and technical project team. Omission of QA samples is based on meeting project objectives and goals, rather than simply to reduce cost. The project chemist balances the need to maintain quality with the need to perform work for a reasonable cost. The project categories that may not be good candidates for QA sample collection are described below.

8.7.5.1. Underground Storage Tank (UST) Removals. Samples collected to meet state or federal requirements pertaining to UST removals may omit QA samples if regulatory deadlines preclude the QA process.

8.7.5.2. Lead Paint Testing. Construction building material and debris sampling to test for leaded paint is not generally considered to be Environmental Restoration work. Samples of building materials or debris collected solely to test for the presence of leaded paint will not typically benefit from use of QA samples.

8.7.5.3. Asbestos Testing. Construction building material and debris sampling to test for asbestos is not generally considered to be Environmental Restoration work. Samples of building materials or debris collected solely to test for the presence of asbestos will not typically benefit from use of QA samples.

8.7.5.4. Process Monitoring. Samples collected to demonstrate the day-to-day efficacy of intermediate steps during a treatment process would not typically employ QA samples. However, collection of QA samples from the treatment system influent and discharge locations is recommended on an occasional basis.

8.7.5.5. Waste Characterization. Samples collected of drummed materials, tank contents, barrels, and similar materials for hazardous waste profiling do not usually employ QA samples.

8.7.5.6. Treatability Studies. Samples collected as part of a treatability study to demonstrate the efficacy of a remedial process do not usually employ QA samples. QA samples are recommended for optimization studies.

8.7.5.7. Air Samples. Samples collected as part of an ambient air monitoring program usually do not employ QA sample collection. Specifically, this would apply to co-located air samples for both gas phase and particulate related components since co-located samples are not homogeneous. Gas phase samples collected with a split-sampling device are likely to be homogeneous, and QA samples may provide added value.

8.7.5.8. Wipe Samples. Wipe samples (*i.e.* for PCB analysis, metals, etc.) will not usually benefit from QA sample collection since co-located wipe samples are not identical.

8.7.5.9. Non-routine Methods. Certain methods are experimental, or laboratory-specific, and it is not possible to replicate them in a QA laboratory. If duplication of the method is difficult, QA samples are not usually employed.

8.7.5.10. Screening Data. Samples collected as part of a screening program usually do not employ QA sample collection. This would include screening data generated from immunoassay test kits, x-ray fluorescence, colorimetric, or field gas chromatography analyses.

8.8. Procedures for CDQM and Construction Quality Management by Project Phase. The following paragraphs outline the procedures for chemical data quality and construction quality management for the investigative, pre-design and design, and remedial or removal action phases of the USACE Environmental Restoration program. The outlined activities demonstrate use of the six primary CDQM activities described earlier in Section 8.6. and in the technical document review process for Category A projects described in Section 8.2.

8.8.1. Investigative Phase. The investigative phase consists of site characterization, engineering analysis, risk assessment, potentially responsible party (PRP) data gathering, and regulatory analysis. The investigative phases from the CERCLA process are the Preliminary Assessment/Site Inspection (PA/SI) and the Remedial Investigation/Feasibility Study (RI/FS). The investigative phases from the RCRA process are the RCRA Facility Assessment (RFA),

RCRA Facility Investigation (RFI) and the Corrective Measures Study (CMS). For non-time critical removal actions, a PA/SI is performed initially and is followed by an Engineering Evaluation/Cost Analysis (EE/CA). The EE/CA takes the place of the RI/FS. The HTRW Design District writes the scope of services. For Category B projects (see paragraph 8.2.1.), the HTRW Design District submits scope of services to HTRW-CX for review. The HTRW Design District solicits prime contractor services, negotiates, and awards the contract or delivery order. The prime contractor identifies primary laboratory to the District. The PM, project chemist, project engineer, or other appropriate technical personnel for the project requests validation of the primary laboratory by the HTRW-CX via electronic mail or facsimile.

8.8.1.1. The HTRW-CX follows the process described in EM 200-1-1 (ref. 1.3.9.) to validate the laboratory. If the laboratory has not previously been validated by the HTRW-CX, the project chemist screens the laboratory to determine if its technical capabilities merit validation. Depending on the laboratory's validation status, some or all of the following procedures may be omitted. If requested by the HTRW-CX, the primary laboratory submits its Laboratory Quality Management Manual (LQMM) or Quality Assurance Plan (QAP), a representative standard operating procedure (SOP); to demonstrate the laboratory has the capability to run the required methods, and petroleum hydrocarbon SOPs (if necessary) to the HTRW-CX. Based on satisfactory review of the QAP and SOPs, performance evaluation samples are sent if available. The laboratory is then inspected by HTRW-CX. Personnel from the HTRW Design District and CEERD-EE-Q may assist with this process. If the laboratory fails to become validated, another laboratory is selected.

The prime contractor submits the Sampling and Analysis Plan (SAP), consisting of a Quality Assurance Project Plan (QAPP) and a Field Sampling Plan (FSP), for HTRW Design District review and approval. Other environmental regulatory programs may require different documentation than a SAP. For Category B projects (see paragraph 8.2.1), the HTRW Design District sends the SAP to the HTRW-CX for review, the HTRW-CX provides recommendations for improvement back to HTRW Design District.

From the SAP, the HTRW Design District or the CEERD-EE-Q makes an estimate of the cost of QA sample analysis. The budgeted amount is funded by the HTRW Design District to the CEERD-EE-Q, contract laboratory coordinator, or contract QA laboratory prior to sending samples for QA analysis. The HTRW Design Districts provide the CEERD-EE-Q, contract laboratory coordinators, and/or contract laboratories with the following information: 1) project name; 2) approximate sampling dates; 3) number of samples; 4) matrix (matrices); 5) analyses; 6) DQOs; and 7) turnaround time.

8.8.1.2. Fieldwork begins after the HTRW Design District approves the SAP and the technical team leader or project chemist coordinates with the prime contractor for (commencement of) field and laboratory activities. Samples are collected in the field with project and QC samples shipped to the primary laboratory and QA samples shipped to a different laboratory. QA laboratory support is available to the Districts from the Chemistry Quality Assurance Branch Laboratory (CEERD-EE-Q) located in Omaha, NE. The CEERD-EE-Q is aligned with the Environmental Laboratory at WES located in Vicksburg, MS. Technical project planning teams determine the best course of action to obtain QA laboratory functions using either the CEERD-

EE-Q or a contract laboratory. All laboratories selected for use have been currently validated by the HTRW-CX validation procedure and are subject to audit at any time as previously discussed.

The primary laboratory and the CEERD-EE-Q laboratory (or contract laboratory coordinators) are notified upon final shipment of project samples. The prime contractor's analytical results are submitted to the HTRW Design District within the time frame identified in the contract. The analytical results that correlate with the QA samples are sent to the CEERD-EE-Q (or contract laboratory coordinators) at the same time. A CEERD-EE-Q chemist (a project chemist, or a contract laboratory coordinator) prepares the Chemical Quality Assurance Report (CQAR) and submits it to the HTRW Design District and the HTRW-CX. The HTRW Design District provides the CQAR to the prime contractor for inclusion in the project report.

The prime contractor prepares the draft project report and submits it to the HTRW Design District. The project report includes the CQAR, as well as the contractor's assessment of the primary laboratory data. The report is reviewed by the same office(s) that reviewed the SAP. The project chemist writes the Chemical Data Quality Assessment Report (CDQAR) or an equivalent report addressing data usability and DQO attainment from information received from the prime contractor and the CQAR. CDQARs (or an equivalent report) are prepared for all in-house and contractor executed projects. CQARs and CDQARs are sent to the HTRW-CX for all projects.

8.8.2. Pre-Design and Design Phase. The pre-design and design phase of the Environmental Restoration program consists of remedial action selection and design. The CERCLA design phase is remedial design (RD). The corresponding RCRA phase is called the corrective measures design (CMD). The following outline applies when the design is prepared by a contractor. Modifications are required if the design is performed in-house.

8.8.2.1. Design District writes scope of services. For Category B projects (as discussed earlier in Section 8.2.), the HTRW Design District submits scope of services to HTRW-CX for review. The HTRW Design District solicits prime contractor services and also negotiates and awards prime contractor design contract or delivery order. If investigative activities are included in the design contract, steps discussed above in the investigative phase (Section 8.8.1.) are followed.

The prime contractors submit design analysis reports that contain a section that specifically addresses chemical quality management concerns. The prime contractor also submits plans and specifications, which include chemical quality management at the preliminary, intermediate, and final phases. For the Total Environmental Restoration Contract (TERC), the prime contractor submits a Work Plan for each delivery order. These documents are submitted, by the prime contractor, to the HTRW Design District for approval. The chemical section of the plans and specifications or work plan gives the construction contractor instructions for writing the SAP in addition to including all necessary site-specific chemical detail. For Category B projects, the HTRW Design District submits these documents (to include the design analysis, plans and specifications, and the work plan) to the HTRW-CX for technical review, and comments are sent back to the HTRW Design District.

The HTRW Design District assures that appropriate comments are addressed and incorporated into the documents. Revised documents and annotated comments are sent to the offices generating comments at the next submittal stage. Final (100%) plans and specifications are approved by the HTRW Design District. From the contract specifications, a preliminary estimate is made of the funding required to support specified QA activities. The District awards the construction contract.

**8.8.3. Remedial or Removal Action Phase.** Many construction offices do not have sufficient chemistry training to make the decisions necessary to support the HTRW program. These construction offices rely on basic chemistry support from resources at their HTRW Design District, CEERD-EE-Q, or the HTRW-CX. Several guidance documents integrate chemical data quality assurance for remedial actions into existing QA procedures for construction, including: ER 415-1-10, Construction Contractor Submittal Procedures (30 May 1995); ER 415-1-302, Construction Inspection and Work Records (30 December 1993); ER 1180-1-6, Construction Quality Management (30 September 1995); EP 715-1-2, A Guide to Effective Contractor Quality Control (01 February 1990); CEGS 01440, Contractor Quality Control (October 1994); and CEGS 01450, Chemical Data Quality Control (November 1994).

The District representative requests validation of the primary laboratory by the HTRW-CX via electronic mail or facsimile that initiates the process and procedures for laboratory validation. The designated HTRW Design District, CEERD-EE-Q laboratory, or HTRW-CX (depending upon which organization is providing the basic chemistry support for the project) assists the Construction District in reviewing the SAP and makes recommendations to the construction District. The Construction District approves/disapproves the prime contractor's SAP. Construction begins after SAP and prime contractor's laboratory is approved. The laboratory is subject to audits as previously discussed.

**8.8.3.1.** The construction representative coordinates with the prime contractor for field and laboratory activities. QA samples are sent to the contract QA laboratory or CEERD-EE-Q laboratory throughout the duration of the sampling effort or as defined by the contract specifications. The prime contractor notifies the primary laboratory and the CEERD-EE-Q laboratory or contract QA laboratory when the final project samples have been sent. The prime contractor's analytical results are submitted to the construction office for transmittal to the CEERD-EE-Q laboratory (or contract laboratory coordinator) or project chemist within the time frame identified in the contract. The CEERD-EE-Q chemist, contract laboratory chemist, or contract laboratory coordinator prepares the CQAR and submits it to the Construction District and the HTRW-CX. The Construction District provides the CQAR to the prime contractor for inclusion in the project report.

The prime contractor submits the project report to the Construction District. The project report includes the CQAR, as well as the contractor's evaluation of the primary laboratory data. The construction representative reviews the report with assistance from the HTRW Design District, CEERD-EE-Q, or HTRW-CX staff, as requested. The Construction District writes the CDQAR addressing contract compliance, data usability and DQO attainment from information provided by the construction contractor and the CQAR. CDQARs are sent by the Construction District to the HTRW-CX for all projects.

8.9. Data Management and Archival Process. The prime contractor and laboratories are responsible for generating, controlling and archiving laboratory and field records for all projects. This information is maintained with a system that is effective for retrieval of any documentation that affects the reported results. The PM or technical team leader determines whether supporting data is to be transferred from the prime contractor to USACE upon contract completion or whether the prime contractor is to be responsible for archiving the data. This includes record generation and control, security, and maintenance of all project related documents. The duration of laboratory data and field record retention is specified as part of the project DQOs.

8.9.1. Laboratory. The laboratory prepares and retains full analytical and QC documentation that allows sample tracking from initiation to disposal. The following minimum records are stored for each project: 1) original work order, chain-of-custody, and other pertinent documents received with the samples, 2) communications between the laboratory, field, and the customer, 3) any associated corrective actions, 4) laboratory data packages, 5) finalized data report, 6) laboratory log books, and 7) electronic data. The laboratory also maintains its QAP and relevant SOPs for the methods performed.

8.9.2. Field. Project-specific records that relate to field work performed are also retained. These records may include correspondence, chain-of-custody records, field notes, and reports issued as a result of the work. In addition, records that document all field operations are retained. This may include equipment performance records, field log books, drilling logs, maintenance logs, personnel files, general field procedures, and corrective action reports. For field operations hard copy records are acceptable.

8.10. Construction Management. The Corps of Engineers' philosophy for quality management in construction is outlined in ER-1180-1-6, Construction Quality Management. Obtaining quality construction is a combined responsibility of the construction contractor and the government. Their mutual goal is a quality product conforming to the contract requirements. QA is required on all construction contracts. The contractor controls the quality of the work and the Government, in a separate but coordinated effort, assures that the level of quality set by the statement of work or plans and specifications is achieved.

8.10.1. Contractor Quality Control (CQC). CQC is the system by which the contractor bears responsibility for all activities necessary to manage, control, and document work to comply with contract plans and specifications. The contractor's responsibility includes ensuring adequate quality control services are provided for work accomplished on-site and off-site by his/her organizations, suppliers, subcontractors, laboratories, and technical consultants. The work activities include safety, submittal management, and all other functions relating to the requirement for quality construction. Prior to the start of work, the contractor prepares a CQC plan indicating staff organization, control of materials, installation techniques, and conformance testing. The original submission of this plan applies to all contract work and is effective for the life of the project. Further information on the interrelationship between the CQC and quality management is contained in the EFARS.

On receipt of the CQC plan, the field engineer reviews the plan to verify conformance with the CQC contract provision. All increments of the CQC function must be addressed with the intention of presenting a complete plan, and the field engineer's review compares and evaluates each of its features against the specified requirements. The following are key points typically checked as part of this review:

- The name, qualifications, and delegated authority of an officer of the corporation responsible for the project.
- Procedures for managing material submittals, including those of subcontractors.
- Control testing procedures for each specific test required in the contract, including laboratory facilities.
- Reporting procedures centering on the three-phase inspection of construction, including proposed reporting formats.

The Contracting Officer's Representative (COR) provides a prompt written response to the contractor accepting the CQC plan as submitted or with specified changes subject to satisfactory performance. A contractor's concurrence with exceptions may be required before start of work. After acceptance of the CQC plan, the contractor notifies the COR in writing of any proposed change. Proposed changes are subject to acceptance by the COR.

8.10.2. Government Quality Assurance. The quality assurance process starts well before construction and may include a number of related activities. These activities include reviews of the plans and specifications for biddability, constructibility, operability, and environmental responsibility; plan-in-hand site reviews; coordination with using agencies or local interests; establishment of performance periods and quality control requirements; field office planning; preparation of QA plans; reviews of QC plans; participation in design review conferences; enforcement of contract clauses; maintenance of QA/QC inspection and work records; establishing CQC requirements; etc. performed prior to the start of construction. (Note. Many of these activities may not be applicable to cost-reimbursement work.)

ER 1180-1-6 requires that the field engineer develop a written QA organization plan that addresses the overall QA operations of the field office. After initial development, the plan will be reviewed and updated as often as necessary, but not less than annually. Supplements incorporating project specific requirements should be developed for those contracts with unique requirements not covered in the basic plan.

The QA plan includes:

- The field's QA organization.
- Procedures for reviewing contractor submittals, quality control reports, and test results.
- Procedures for surveillance of CQC activities.
- Procedures for reviewing CQC reports.
- Procedures for reporting construction deficiencies and following up to assure correction.
- Procedures to assure that the contractor submit all items required by the contract, particularly repetitive items, and

- Procedures for sampling, testing, and QA inspection by Government personnel.

A suggested outline for the QA plan is found in ER 1180-1-6. In accordance with ER 1180-1-6, the field engineer conducts a CQC/QA coordination meeting for detailed planning of activities of Government and contractor quality construction elements. Minutes of this meeting are prepared. On small contracts this meeting may be a part of the pre-construction conference. QA efforts at the inception of each phase of work are particularly effective, since corrective actions are easier to implement at this stage.

The main duty of Quality Assurance Personnel, through monitoring of CQC operations, is to assure that the work is being performed in accordance with the plans and specifications and that the CQC system is functioning effectively. To accomplish this, QA personnel (a) study the plans and specifications in advance, (b) anticipate problems and requirements, (c) perform necessary investigations on a phase of work well in advance of work commencement, and (d) obtain the COR's approval of shop drawings before materials are brought on the job.

QA personnel should be informed that assistance and advice is provided to them, whenever it is needed. Immediately available to them is a copy of the plans and specifications, including all necessary reference material, amendments, revisions, and modification; approved shop drawings for material on the job; applicable volumes of the Construction Inspector's Guide; a copy of EM 385-1-1, Safety and Health Requirements Manual; a copy of the contractor's accident prevention plan; a copy of the CQC plans; site specific safety and health plan, including the enclosed Activity Hazard Analysis Program; daily log reports or books; and camera, rules, tapes, and other measuring devices of testing equipment as required to check the various items of work for which the QA personnel are responsible. The field engineer prepares a QA plan for the office. After initial development, the plan will be reviewed and updated as often as necessary, but not less than annually. Supplements incorporating project-specific requirements will be developed for those contracts with unique requirements not covered in the basic plan. The plan states, in detail, how the CQC activities will be monitored, responsibilities and authority of QA personnel, types of inspections to be performed by QA personnel, methods to be used for inspections performed by the Government, and specific steps to assure compliance of the work with the plans and specifications.

8.10.3. Three-phase control concept. The field engineer ensures that CQC inspections are performed at the outset of each new phase or segment of construction. Preparatory inspections prior to physical work placement ascertain that materials comply with specification and/or approved submittal documents. Initial inspections occurring at the outset of work placement establish and achieve workmanship standards at the beginning of each construction phase. Government participation in preparatory and initial inspections is highly desirable. Follow-up inspections on a daily or routine basis are more productive when preceded by joint contractor/USACE preparatory and initial inspections. Preparatory and initial inspections are performed with checklists to ensure thoroughness. All phases of inspections are documented. It should be kept in mind that the contractor is responsible for conducting these inspections, while the Government is responsible only for assuring they are conducted, are adequate for the purpose, and are properly documented.

8.10.4. Deficiencies in contract performance. The field engineer is on the alert for deficiencies and their prompt correction. Upon detection of a deficiency, the contractor is first informed verbally and, where necessary, the verbal notification is immediately confirmed in writing. Additionally, the USACE representative makes a descriptive entry on the daily QA report and the field engineer insists that a like entry be made by the contractor on the daily CQC report. The District is promptly informed of any refusals by the contractor to correct a deficiency. A complete record is kept of facts relating to the deficiencies in contract performance and efforts to correct them. A number of different remedies are available to the Government, depending on the type of deficiency and the type of contract.

## **9. Assessment and Response**

9.1. Quality Management Reviews. To assure that the quality requirements are met, HQUSACE, in coordination and cooperation with SPD, may conduct quality management reviews. These reviews are made to assess the effectiveness and implementation of individual USACE command's quality management plans. The reviews are accomplished in a stand-alone mode or in conjunction with other command inspections/reviews (i.e., command inspections, Engineer Inspector General inspections, etc.). The Director of Programs Management at SPD will periodically review their own as well as their executing organizations' implementation of the USACE PMBP to evaluate the effectiveness of their quality assurance, efficiency, and execution. Executing organizations (i.e., Districts, FOAs, Laboratories, etc.) shall periodically assess their project and program management processes and practices to ensure effective implementation of the plan requirements.

9.2. Division and CX Audit Responsibilities. SPD, with requested support from the HTRW and/or OE CXs, selectively audits or reviews the QC processes in the Districts. This includes meeting periodically with Districts to review their quality control processes through evaluation of selected products and services at various stages of development to assure compliance with the QMP and to assess their quality. These reviews also help to identify system problems, trends, and improvements (when needed) to the quality management and quality control process, and to assure compliance with current SPD, and HQUSACE policy. The selection of products for detailed audits is based on a number of criteria, including the expressed needs and concerns of the District, new processes or techniques, or product types that have poor performance histories. Determinations of the need for such audits are made at any time during product development.

9.2.1. Audit Process. The audit process may take many forms, including those discussed in Section 8 of this Enclosure. Upon determination that a formal audit of a quality management process is desirable, it shall consist of the following: (1) Letter notification to District Commander identifying need for QC audit, studies/projects to be audited, specific data required for audit (see general data requirements, below) and audit process and schedule specific to the identified studies/projects; (2) Review by QA team of project data provided by District; (3) Counterpart discussions (on an as needed basis); (4) Full audit of project documents (if determined necessary by QA team); and (5) Outbrief/report on the Quality Management of the project to the Chief of the functional element responsible for the technical product being audited and the District Commander.

9.2.2. General Data Requirements for Formal Audit. The data required for a specific study/project generally shall include the following: Brief description of the overall study/project and each activity related thereunto; QCP for study/project; Minutes of the Technical Review Strategy Session; Comments made by the Independent Technical Review Team during both seamless and product specific reviews; Memoranda documenting resolution of ITRT comments; and list of products generated.

9.3. Data Assessment. Anytime chemical data is generated, the quality is assessed prior to use. The type and degree of assessment required depends upon the project data quality objectives. Several different levels of data assessment exist, including data verification, data review, data evaluation, and data validation.

9.3.1. Data Verification. Data verification, the most basic step in data assessment, is a process for evaluating the completeness, correctness, consistency, and compliance of a data package against a standard or contract. In this context, "completeness" means that all required hard copy and electronic deliverables are present. Data verification is performed by the CEERD-EE-Q or contract laboratory coordinator for QA laboratory deliverables and by the laboratory contract holder for primary laboratory deliverables.

9.3.2. Data Review. Data review is the next step in the data assessment hierarchy. Data review is the process of data assessment performed to produce the chemical quality assurance report (CQAR). Data review includes an assessment of summary QC data provided by the laboratory. Data review may include examination of primary and QA laboratory data and the internal quality control and QA sample results to ascertain the effects on the primary laboratory's data.

9.3.3. Data Evaluation. Data evaluation is the process of data assessment done by project chemists to produce a chemical data quality assessment report (CDQAR). Data evaluation is performed to determine whether the data meet project-specific data quality objectives (DQOs) and contract requirements. To prepare a CDQAR, the project chemist relies upon the DQO summary from the Sampling and Analysis Plan, the CQAR, field oversight findings, laboratory audits, performance evaluation sample results, and any other data quality indicators available.

9.3.4. Data Validation. Data validation is required for certain projects. Validation is a process of data assessment in accordance with EPA regional or national functional guidelines, or project-specific guidelines. Data validation includes assessment of the whole raw data package from the laboratory.

9.3.5. Special Requirements. Often, the requirements for data assessment will depend upon the project phase. In particular, data for use in a risk assessment will have specific quality requirements. There are several excellent references on this topic, including Chapter 3 of EM 200-1-4, ["Risk Assessment Handbook: Volume I, Human Health Evaluation", USACE 1995 and Volume II Environmental Evaluation, USACE 1996]; and "Guidance for Data Usability in Risk Assessments (Parts A and B) [Office of Emergency and Remedial Response, EPA Directive 9285.7-09A, 1992].

9.3.6. Required Level of Data Assessment. The degree of data assessment is different for screening level data than for definitive data. Screening level data are typically characterized by less stringent QA/QC procedures. Assessment of screening level data consists of checking whatever QA/QC indicators are available, and confirming the results with definitive analyses, usually at a 10% frequency.

9.3.7. Assessment of Definitive Data. Definitive data are characterized by rigorous QA/QC procedures. The following set of general procedures is applied to the extent possible for all definitive data sets.

9.3.7.1. Data Verification. Definitive data assessment begins at the primary and quality assurance (QA) laboratories. General processes for data quality management at the laboratory are described in EM 200-1-1 as well as EM 200-1-3. Once the data have met the laboratory's standards, data verification is performed to determine if the data package is correct and complete.

9.3.7.2. Data Review. Definitive data review is then performed. See ref. 1.3.12, for more details on the specifics of data review. The data review process documents possible effects on the data that result from various QC failures. It does not determine data usability, nor does it include assignment of data qualifier flags.

The initial inspection of the data screens for errors and inconsistencies. The chemist checks the chain of custody forms, sample handling procedures, analyses requested, sample description and identification, and cooler receipt forms. The chemist then verifies that the data were checked by the laboratory manager or quality assurance officer. Sample holding times and preservation methods are checked and noted.

The next phase of data quality review is an examination of the actual QC data. By examining data from laboratory matrix duplicates, blind duplicates, trip blanks, PE samples, equipment blanks, laboratory method blanks, laboratory control samples (LCSs), LCS duplicates (LCSDs), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogate recoveries, and field samples, the chemist can determine whether the data are of acceptable quality.

Both laboratory control samples and matrix duplicates are examined during data review. The precision of the data is quantified by the relative percent difference (RPD) between two results obtained for the same sample. The samples are either internal laboratory QC samples (*i.e.*, laboratory control samples) or field samples. A high RPD in an LCS/LCSD pair is an indication of overall method failure, and may result in the rejection of an entire data set. Laboratory matrix duplicates and matrix spike duplicates are also assessed by their RPD values. High RPD values for matrix duplicates indicate a lack of reproducibility, and such data are qualified or rejected. Any such results are noted in the assessment of data quality.

Data from blank samples are examined to determine if sample contamination occurred either during or after the sample collection. Equipment or rinsate blanks consist of reagent water passed through or over sampling equipment following sample collection and sample equipment decontamination. Contaminated equipment blanks indicate inadequate decontamination

between samples, and the strong likelihood of cross-contamination between samples. Method blanks are blank samples prepared in the laboratory and analyzed along with project samples. If analytes are detected in a method blank, it is a strong indication of laboratory contamination. This would raise the possibility that project sample aliquots were contaminated in the laboratory as well. Trip blanks are samples of reagent water that accompany the project samples from the field to the laboratory. Trip blanks accompany each shipment of water samples to be analyzed for volatile organic compounds. Analysis of the trip blanks indicates whether sample contamination occurred during shipment and/or storage.

Surrogate recoveries are scrutinized to ensure they fall within an acceptable range. Adequate surrogate recoveries in QC samples (blanks and LCSs) indicate that sample extraction procedures were effective, and that overall instrument procedures were acceptable. Surrogate recoveries in field samples are a measure of possible matrix effects and can indicate complete digestion or extraction of a sample. Surrogate recoveries outside control limits may result in qualified or rejected data.

A laboratory control sample (LCS) is an aliquot of a clean matrix (*i.e.*, clean water or sand) that contains a known quantity of an analyte. Good recoveries from an LCS indicate that the analytical method is in control and that the laboratory is capable of generating acceptable data. The evaluation of possible matrix effects and accuracy of the data are monitored by analysis of matrix spike and matrix spike duplicate samples. A matrix spike sample is prepared by adding a known quantity of an analyte to a field sample. The matrix spike duplicate is prepared in an identical manner. Matrix spike and matrix spike duplicates are analyzed at least once per every twenty samples, or once per batch, whichever is greater. Recovery of the matrix spike indicates the absence of a matrix effect and is another measure of data accuracy. Comparison of the matrix spike and matrix spike duplicate results provides an indication of data precision. All matrix spike and matrix spike duplicate data are examined. Low or high spike recoveries are evidence of matrix effects and poor accuracy; a high RPD for duplicates is evidence of low precision; all such results are reported in the data review.

A blind duplicate quality control (QC) sample is submitted to the primary laboratory, which analyzes the majority of the samples. Analysis of the QC duplicate sample provides a measure of sample homogeneity and intra-laboratory variations. An additional replicate sample is provided to an independent quality assurance (QA) laboratory, to provide a further test of sample homogeneity and a test of inter-laboratory accuracy. QA and QC samples effectively provide triplicate analysis of a subset of the total project samples. The three results for each set are carefully compared and tabulated. (Data comparison criteria for evaluation of data comparability are described in ref. 1.3.12.). If two of three data sets agree, each laboratory's internal QA/QC data are reassessed to determine which set of data is the most accurate. Data from related analyses are inspected to determine which set of data is more accurate.

9.3.7.3. Data Evaluation. Data evaluation follows data review. During data evaluation, the project chemist uses the results of the data review as summarized in the CQAR to determine the usability of the data. The CQAR documents the potential effects of QA/QC failures on the data, and the project chemist assesses their impact on attainment of DQOs and contract compliance.

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9.3.7.4. Data Qualifiers. Data assessment results in documentation of the quality and usability of the data. Data qualifiers, called flags, are applied as appropriate to alert the data user of deficiencies in the data. Data qualifiers are applied by the project chemist, taking into account the project-specific data quality objectives. The qualifiers are different depending on the type of data evaluation performed and are defined appropriately within the documentation. Data validation by EPA functional guideline procedures may employ different flags than project-specific validation data qualifiers. Despite the data assessment flags used, the qualifiers serve the same purpose. The flags are used to delimit the usability of the data, generally because of quality control failures.

**ENCLOSURE 4  
DEFINITIONS USED IN  
HTRW & CDQM PROJECTS**

Accuracy. The closeness of agreement between the measured value and the true value. Calculated as percent recovery.

Activity. An all-inclusive term describing a specific set of operations or related tasks to be performed, either serially or in parallel (e.g., research and development, field sampling, analytical operations, equipment fabrication, etc.), that in total result in a product or service.

Assessment. The evaluation process used to measure the performance or effectiveness of a system and its elements.

Audit. A independent, systematic examination to determine whether activities comply with planned arrangements, whether the arrangements are implemented effectively, and whether the results are suitable to achieve objectives.

Bias. The systemic or persistent distortion of a measurement process which causes errors in one direction.

Chain of custody. An unbroken trail of accountability that ensures the physical security of samples, data, and records.

Characteristic. Any property or attribute of a datum, item, process, or service that is distinct, describable and/or measurable.

Comparability. A qualitative characteristic which defines the extent to which a chemical parameter measurement is consistent with, and may be compared to, values from other sampling events.

Completeness. A quantitative evaluation of what percent of the chemical measurements met the project data quality objectives.

Conformance. An affirmative indication or judgment that a product or service has met the requirements of the relevant specifications, contract, or regulation.

Contractor. Any organization or individual that contracts to furnish services or items or perform work.

Corrective action. Measures taken to rectify conditions adverse to quality and, where possible, to preclude their recurrence.

Customer. The owner, client, user, project manager (PM), or beneficiary of a service or product.

Data Assessment. The all-inclusive process used to measure the effectiveness of a particular data gathering activity. This process may be comprised of data verification, data review, data evaluation, and data validation.

Data Evaluation. The process of data assessment done by the district project chemist to produce a chemical data quality assessment report.

Data of known quality. Data that have the qualitative and quantitative components associated with their derivation documented appropriately for their intended use, and such documentation is verifiable and defensible.

Data Quality Assessment (DQA). A statistical and scientific evaluation of the data set to determine the validity and performance of the data collection design and statistical test, and the adequacy of the data set for its intended use.

Data Quality Objective Process. A Total Quality Management (TQM) tool, based on the Scientific Method and developed by the U.S. Environmental Protection Agency to facilitate the planning of environmental data collection activities. The DQO process enables planners to focus their planning efforts by specifying the use of the data (the decision), the decision criteria (action level), and the decision-maker's acceptable decision error rates. The products of the DQO process are the DQOs (See also Graded Approach).

Data Quality Objectives (DQOs). Qualitative and quantitative statements that clarify technical and quality objectives, define the appropriate type of data, and specify tolerable levels of potential decision errors that are used as the basis for establishing the quality and quantity of data needed for support decisions.

Data Review. The process of data assessment performed by the USACE HTRW chemistry laboratory to produce the chemical quality assurance report.

Data usability review. The process of ensuring or determining whether the quality of the data produced meets the intended use of the data.

Data Usability. The process of ensuring or determining whether the quality of the data produced meets the intended use of the data.

Data Validation. The process of data assessment in accordance with USEPA regional or national functional guidelines, or USACE guidelines, or project-specific guidelines.

Data Verification. The process for evaluating the completeness, correctness, consistency, and compliance of a data package against a standard or contract.

Deficiency. An unauthorized deviation from approved procedures or practices, or a defect in an item.

Definitive Data. Data that are generated using rigorous, analyte-specific analytical methods where analytical identifications and quantifications are confirmed and QA/QC requirements are satisfied.

Design review. A documented evaluation by a team, including personnel such as the responsible designers, the client for the work or product being designed, and a QA representative, but other than the original designers, to determine if a proposed design will meet the established design criteria and perform as expected when implemented.

Design. The process of (1) developing the analyses that define the required technical systems (e.g., environmental, geotechnical, hydraulic, architectural, structural, electrical, mechanical, fire protection, etc.) which will be utilized, (2) producing the technical portions of the construction contract documents (i.e., the drawings and specifications), and (3) preparing the construction or related cost estimate.

Document. Any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results.

Duplicate sample. A sample replicate collected as near as possible at an identical time and place as an original sample. Sometimes used in place of a split sample for volatile analytes, or to assess overall sample matrix homogeneity (see also split sample).

Engineering. For the purpose this document, the efforts of technical disciplines involved in producing a technical service or product (e.g., a design, engineering feasibility study, geotechnical report, environmental report, design analysis, facility master plan, hydraulics/hydrology analysis, construction cost estimate, etc.).

Entity. Something which can be individually described and considered, such as a process, product, item, organization, or combination thereof.

Feedback. Communication of data quality performance to sources which can take appropriate action.

Field Operating Activities. Five entities within the USACE that assist in policy development and implementation and provide support services to the USACE. They include the Center for Public Works, Finance Center, Humphreys Engineer Center Support Activity, Marine Design Center, and Water Resources Support Center.

Finding. An assessment conclusion that identifies a condition having a significant effect on an item or activity. An assessment finding may be positive or negative, and is normally accompanied by specific examples of the observed condition.

Functional Elements. Refers to the essential units (and staff) of the organization (i.e., Division, District, MSC, FOA, etc.) responsible for carrying out its mission functions. Mission essential functions are defined and assigned to Divisions and Districts by HQUSACE.

Geographic District. Areas of work assigned to Districts based upon the physical location within the District boundaries and mission.

Graded Approach. The process of basing the level of application of managerial controls applied to an item or work according to the intended use of results and the degree of confidence needed in the quality of the results.

HTRW activities. Activities undertaken for the U.S. EPA's Superfund Program, the Defense Environmental Restoration Program (DERP), including Formerly Used Defense Sites (FUDS) and Installation Restoration Program (IRP) sites at active DOD facilities, Environmental Restoration/HTRW actions associated with Civil Works projects, and any other mission or non-mission work performed for others at Environmental Restoration/HTRW sites. Such activities include, but are not limited to, Preliminary Assessments/Site Inspections (PA/SI), Remedial Investigations (RI), Feasibility Studies (FS), Engineering Evaluation/Cost Analyses (EE/CA), RCRA Facility Investigations/ Corrective Measures Studies/ Corrective Measures Implementation/ Closure Plans/ Part B Permits, or any other investigations, design activities, or remedial construction at known, suspected, or potential Environmental Restoration/HTRW sites. Environmental Restoration/HTRW activities also include those conducted at petroleum tank sites and construction sites containing Hazardous, Toxic, and Radioactive Waste.

HTRW chemistry laboratory. A USACE laboratory which has been designated by CEMP-RT and validated by the HTRW CX to provide analytical services to the HTRW program.

Independent assessment. An assessment performed by a qualified individual, group, or organization that is not a part of the organization directly performing and accountable for the work being assessed.

Independent Assessment. An assessment performed by a qualified individual, group, or organization that is not a part of the organization directly performing and accountable for the work being assessed.

Inspection. Examination or measurement of an item or activity to verify conformance to specific requirements.

Item. An all-inclusive term used in place of the following: appurtenance, facility, sample, assembly, component, equipment, material, module, part, product, structure, subassembly, subsystem, system, unit, documented concepts, or data.

Management system. A structured non-technical system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for conducting work and for producing items and services.

Management. Those individuals directly responsible and accountable for planning, implementing, and assessing work.

Method. A body of procedures and techniques for performing an activity systematically presented in the order in which they are to be executed.

Nonconformance. A deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate; nonfulfillment of a specified requirement.

Observation. An assessment conclusion that identifies either a positive or negative condition.

Ordnance and Explosives (OE) activities. All work undertaken to manage or eliminate the immediate risks associated with OE related material. OE activities are usually response activities undertaken for DERP, FUDS, or Base Realignment and Closure (BRAC) projects. OE responses include site inventories, preliminary assessments, site investigations, public involvement, engineering estimates, cost analyses, action memoranda, removal designs, removals (both time critical & non-time critical), and clean-up of residual OE.

Partnering. Partnering may be defined as “the development and sustainment of a relationship that promotes achievement of mutually beneficial goals”. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of delivered products and services. Partnering is a voluntary relationship that builds upon the good relationship that exists among the professional participants involved in any engineering or design activity. Partnering is further described in ER 1110-1-12 (ref. 1.3.6.).

Precision. A measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions, expressed generally in terms of standard deviation.

Primary laboratory. Laboratory that analyzes the majority of the project samples.

Procedure. A specified way to perform an activity.

Process. A set of interrelated resources and activities which transforms inputs into outputs.

Program - is a group of projects, services or other activities that may be categorized by funding source, customer requirements or other common criteria for which resources are allocated and collectively managed.

Project Management Plan (PMP). The detailed, specific plan, used to manage and control the delivery of a project from its inception to completion.

Project Manager (PM). The leader of the project delivery team, responsible for managing the project parameters (budget, cost, safety, schedule, scope, and quality), as well as interfacing with those involved in the project process (customers, functional elements, government, and non-government entities).

Project. An organized set of activities within a program (products, services, etc.) intended to produce a specific expected outcome or solution to a customer problem or need. Customer, in this sense, is used in a broad manner and refers to discrete (even localized) entities, organizations internal or external to the Corps and, in some cases, the Nation as a whole.

Quality Assurance (QA). An integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement that measures the degree of excellence of and insures that the system is functioning to provide the desired specified product or service.

Quality Assurance Coordinator (QAC). The Division point of contact regarding quality assurance of environmental products and services with responsibility to oversee District products and services and to provide environmental technical assistance to Corps personnel.

Quality assurance laboratory. The USACE HTRW chemistry laboratory, or its subcontracted agent that is responsible for analysis of the project QA samples.

Quality assurance sample. A sample collected to monitor the quality of sampling operations. This type of sample is analyzed by the quality assurance laboratory and typically includes split samples, duplicate samples, and various types of blank samples.

Quality Control (QC). The overall system of technical activities that monitors the degree of excellence provided for the performance of a task that meets the agreed-upon requirements or standards of the customer.

Quality Control Plan (QCP). A written technical management plan for a specific technical product or service (i.e., a contract requirement or an in-house effort). The QCP becomes part of the Project Management Plan (PMP).

Quality control sample. A sample collected to monitor and control the quality of sampling operations. This type of sample is analyzed by the primary laboratory and typically includes split samples, duplicate samples, and various types of blank samples.

Quality control. The overall system of technical activities that monitors the degree of excellence of environmental data so that the stated requirements of defined standards are achieved.

Quality improvement. A management program for improving the quality of operations.

Quality indicators. Measurable attributes of the attainment of the necessary quality for a particular environmental decision. Indicators of data quality include precision, bias, completeness, representativeness, reproducibility, comparability, sensitivity, and statistical confidence.

Quality management. The aspect of the overall management system of the organization that determines and implements the quality policy. Quality management includes strategic planning, allocation of resources, and other systemic activities pertaining to the quality system.

Quality system. A structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products,

items, and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC.

Quality. The totality of features and characteristics of a product or service that bear on its ability to meet the stated or implied needs and expectations of the user.

Representativeness. A measure of the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process, or an environmental condition.

Reproducibility. The precision, usually expressed as variance, that measures the variability among the results of measurements of a sample at different laboratories.

Screening Level Data. Data that are generated by less precise methods of analysis, less rigorous sample preparation, and less stringent QA/QC procedures. The data generated provide analyte identification and quantification, although the quantification may be relatively imprecise.

Service Agent. A non-regulated entity within the federal government that provides project-specific environmental clean-up or compliance services support to another federal agency. The USACE is a service agent to a number of regulated federal agencies.

Significant deficiency. Any state, status, incident, or situation of an environmental process or condition, or environmental technology in which the work being performed will be adversely affected sufficiently to require corrective action to satisfy quality objectives or specifications and safety requirements.

Split sample. A sample which has been collected, homogenized, and divided into two or more portions for analysis by multiple laboratories. Applicable for all test parameters except those involving volatile analytes where homogenization might affect the concentration of volatile substances (see also duplicate sample).

Standard operating procedure (SOP). A written document that details the process for an operation, analysis, or action, with thoroughly prescribed techniques and steps, and that is officially approved as the method for performing certain routine or repetitive tasks.

Surveillance. Continual or frequent monitoring and verification of the status of an entity and the analysis of records to ensure that the specified requirements are being fulfilled.

Technical Liaison Manager: The central point of contact (POC) at the HTRW CX assigned to each individual MSC. The TLM provides the following support for each assigned MSC: manages all project-specific technical assistance and technical review assignments including resolution of significant issues; communicates regularly with designated central POC at the MSC to apprise of new technical guidance/policy and identify needed general guidance/policy, training needs, and technical assistance needs.

Technical review. A documented critical review of work that has been performed within the state of the art. The review is accomplished by one or more qualified reviewers who are independent of those who performed the work, but are collectively equivalent in technical expertise to those who performed the original work. The review is an in-depth analysis and evaluation of documents, activities, material, data, or items that require technical verification or validation for applicability, correctness, adequacy, completeness, and assurance that established requirements are satisfied.

Technical systems audit. A thorough, systematic, on-site, qualitative audit of facilities, equipment, personnel, training, procedures, record keeping, data verification/ validation, data management, and reporting aspects of a system.

Total Army Quality (TAQ). A leadership philosophy and management approach which empowers all individuals to build on the aggregate capabilities of our quality Army and focuses on continuous process improvement to meet or exceed the expectations of internal and external customers.

Traceability. The ability to trace the history, application, or location of an entity by means of recorded identifications. In a data collection sense, it relates calculations and data generated throughout the project back to the requirements for quality for the project.

**ENCLOSURE 5  
ACRONYMS USED IN  
HTRW & CDQM PROJECTS**

A2LA	American Association for Laboratory Accreditation
ACASS	Architect-Engineer Contract Administration Support System
ACO	Administrative Contracting Officer
A-E	Architect-Engineer
AFARS	Army Federal Acquisition Regulation Supplement
AIS	Automation Information System
ANSI	American National Standards Institute
ARMS	Automated Review Management System
ASQ	American Society for Quality
ASQC	American Society for Quality Control
BCOE	Biddability, Constructibility, Operability, and Environmental
BD/DR	Building Demolition/Debris Removal
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CCAS	Construction Contract Appraisal Support System
CDQAR	Chemical Data Quality Assessment Report
CDQM	Chemical Data Quality Management
CEFMS	Corps of Engineers Financial Management System
CEGS	Corps of Engineers Guide Specification
CEMP-RT	Corps of Engineers, Military Programs Directorate, Environmental Restoration Division, Environmental and Chemical Engineering Branch
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CMD	Corrective Measures Design
CMS	Corrective Measures Study
COC	Chain of Custody
COEMIS	Corps of Engineers Management Information System
COR	Contracting Officer's Representative
COTS	Commercial Off-The-Shelf
CQAB	Chemistry Quality Assurance Branch, office symbol CEERD-EE-Q
CQAR	Chemical Quality Assurance Report
CQC	Contractor Quality Control
CX	Center of Expertise
DERP	Defense Environmental Restoration Program

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DETS	Directorate of Engineering and Technical Services
DFARS	Defense Federal Acquisition Regulation Supplement
DOD	Department of Defense
DPM	Deputy for Programs and Project Management
DQO	Data Quality Objectives
EB	Equipment Blank
EC	Engineering Circular
EE/CA	Engineering Evaluation/Cost Analysis
EFARS	Engineering Federal Acquisition Regulation Supplement
EM	Engineering Manual
EP	Engineering Pamphlet
EPA	(U. S.) Environmental Protection Agency
ER	Engineering Regulation
FAR	Federal Acquisition Regulation
FDM	Feature Design Memorandum
FOA	Field Operating Activity
FS	Feasibility Study
FSP	Field Sampling Plan
FUDS	Formerly Used Defense Sites (DOD)
FUSRAP	Formerly Utilized Sites Remedial Action Program (DOE)
GRO	Gasoline Range Organics
HQ	Headquarters
HQUSACE	Headquarters, U.S. Army Corps of Engineers
HTRW	Hazardous, Toxic, and Radioactive Waste
ID	Identification
ID/IQ	Indefinite Delivery/Indefinite Quantity
IFB	Invitation For Bid
IRC	Issue Resolution Conference
IRM	Information Resources Management
IRMSC	IRM Steering Committee
IRP	Installation Restoration Program
ISMP	Information Systems Modernization Program
ITA	Innovative Technology Advocate
ITRC	Interstate Technology and Regulatory Cooperation
ITRT	Independent Technical Review Team

LAN	Local Area Network
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LQMM	Laboratory Quality Management Manual
LUFT	Leaking Underground Fuel Tank
MARC	Multiple Award Remedial Action Contract
MARKS	Modern Army Record Keeping System
MDL	Method Detection Limit
MFR	Memorandum for Record
MILCON	Military Construction
MOA	Memorandum of Agreement
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSC	Major Subordinate Command
NARA	National Archives and Records Administration
NELAP	National Environmental Laboratory Accreditation Program
NEPA	National Environmental Policy Act
NPL	National Priorities List
O&M	Operation and Maintenance
OE	Ordnance and Explosive
PA	Preliminary Assessment
PA/SI	Preliminary Assessment/Site Inspection
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PDT	Project Delivery Team
PE	Performance Evaluation
PM	Project Manager
PMBP	Program and Project Management Business Process
PMP	Project Management Plan
POC	Point of Contact
P-RAC	Pre-placed Remedial Action Contract
PRB	Project/Program Review Board
PROMIS	Project Management Information System
PRP	Potentially Responsible Party
QA	Quality Assurance
QAC	Quality Assurance Coordinator
QAP	Quality Assurance Plan
QAPP	Quality Assurance Project Plan

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QC	Quality Control
QCP	Quality Control Plan
QMP	Quality Management Plan
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RFP	Request for Proposal
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RMS	Resident Management System
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SDL	Sample Detection Limit
SF	Standard Form
SFO	Support for Others
SI	Site Inspection
SmART	Small Action Remedial Tool Contract
SOP	Standard Operating Procedures
SPD	South Pacific Division, Corps of Engineers
SRL	Sample Reporting Limit
SSHP	Site Safety and Health Plan
TAQ	Total Army Quality
TERC	Total Environmental Restoration Contract
TIC	Tentatively Identified Compound
TLM	Technical Liaison Manager
TPH	Total Petroleum Hydrocarbon
TQM	Total Quality Management
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WES	Waterways Experiment Station

**Enclosure 6**  
**QUALITY MANAGEMENT FOR**  
**Water Control and Water Quality (WC/WQ) Products**

**1. Purpose**

This enclosure provides specific information on the Quality Management of Water Control Management and Water Quality Management products and services within the South Pacific Division.

**2. Applicability**

This enclosure applies to each district and division element having responsibilities for WC/WQ management of civil works projects within the South Pacific Division. Management of the different components of this program extends beyond the Engineering Division of each District.

**3. References**

3.1. ER 1110-2-240, Water Control Management.

3.2. ER 1110-2-1400, Reservoir/Water Control Centers.

3.3. CESPD R 1110-2-8, Guidance on the Preparation of Deviations from Approved Water Control Plans.

**4. CESPD Water Control Center (WCC)**

Reference 3.2 designates the Division Water Control Center (WCC) as the organizational unit responsible for all water control activities in its Major Subordinate Command (MSC), to achieve project purposes such as flood control, water quality control, water supply, irrigation, navigation, hydropower, recreation, fish and wildlife, and to alleviate sediment and erosion problems. To fulfill these responsibilities, SPD WCC staff will actively participate in the Quality Control Process as outlined in this enclosure.

**5. Quality Management of WC/WQ Products**

The districts in the preparation of Quality Control/Management of WC/WQ products will follow appendix D, with the following additional requirements:

5.1. Choosing a Water Control ITRTeam Member. Because WC/WQ products are approved at the MSC (reference 3.1 and 3.2) and because of the sensitive nature of these products, the district will consult with MSC WCC staff in determining an appropriate water control ITRT representative for each water control product. The consultation will result in a Water Control ITRT representative being selected from either:

- The MSC WCC staff (Note: If a MSC WCC staff member participates in the technical review of the product, that MSC WCC staff member may not be involved in the Division QA of that product),
- The local district producing the product, or
- Another district.

5.2. Each district office will prepare district Programmatic QCPs for WC/WQ Products. Study and review team members for water control products shall be formed from the Water Control/Water Management Section/Branch, H&H, Environmental, Operations, Counsel, as well as any other appropriate disciplines.

5.3. Certification of WC/WQ products will be done by the responsible function chief.

5.4. WC/WQ products for which the above apply include:

- Water Control Manuals (for individual Projects)
- Master Water Control Manuals
- Interim Water Control Plans During Construction
- Preliminary Water Control Plans
- Final Water Control Plans
- Standing Instructions to Project Operators for Water Control
- Drought Contingency Plans
- Annual Flood Damages Report
- Initial Reservoir Filling Plans
- Hydropower Operating Agreements

## **6. Division Policy Compliance Review & Quality Assurance**

6.1. Division Policy Compliance Review & Quality Assurance (PCR&QA) Team. Upon submittal to Division of any WC/WQ document, a member of the MSC WCC shall be designated as the Team Leader for the PCR&QA process. The Team Leader will determine which CESPD offices will participate in the process.

6.2. Some of the documents listed in Paragraph 5.4 above require extensive coordination, review prior to Division approval. For each WC/WQ document, the Team Leader will determine which CESPD offices will participate in the review of that WC/WQ document. To maximize efficiency, reviewers will be selected only from those disciplines involved in the specific subject area under review.

6.3. Team Comments. The Team Leader will assemble any comments, resolve comment discrepancies, and provide them to the originating district office. The district shall prepare written responses and submit them and the revised document (if necessary) to the MSC WCC. Throughout the entire PCR&QA process, district and division staff will work as a team to resolve any outstanding comments. A Division Team follow-up will be performed to ensure that all comments have been adequately addressed. If necessary, a meeting may be held at CESPD to

resolve disputed comments. The MSC WCC Chief shall decide any unresolved/disputed Comments.

6.4. Document Approval. The MSC WCC will recommend approval of the product, upon satisfactory response to any PCR&QA comments.

## **7. WC/WQ Reports**

7.1. The following WC/WQ documents are routinely prepared by different district offices and submitted to the division WCC:

- Water Control Management Activities
- Water Quality
- Sedimentation Activities
- Annual Flood Damages
- Water Control Data System Master Plan
- Status of Water Control Data Systems
- U.S. Geological Survey (USGS) Cooperative Streamgaging Program
- Data on Non-Federal Hydropower Development Plans
- National Weather Service (NWS)/Corps Cooperative Reporting Network Program

7.2. The following WC/WQ documents are submitted to CESPD on a non-routine basis:

- Project Operations During Flood Emergencies
- Post-Flood Summaries of Project Regulation
- Flood Emergency Plans
- Initial Reservoir Filling Plans
- Hydropower Operating Agreements

7.3. Special Suspense Dates. Each of these routine WC/WQ documents submitted by the districts requires CESPD review and subsequent submittal to HQUSACE as a component of the division report. A suspense will be designated by the WCC. Generally, district reports will be submitted to the WCC at least three weeks prior to the HQUSACE suspense date.

7.4. WC/WQ Budgetary Data. District WC/WQ budgetary data is submitted to District Operations Branch as a component of the District Engineering Division O&M Budget Request. A copy of the districts' consolidated (i.e., WC/WQ) component will be sent to the division WCC for information purposes. The suspense date for submittal will be specified by the WCC based on the scheduling of the CESPD O&M Budget meeting in May of each year.

## **8. Deviations from Approved Water Control Plans**

Because of the time sensitive nature of most deviations, reference 3.3 was prepared to outline what information needs to be compiled and submitted by a district office to the division office. Per reference 3.3, districts closely coordinate the preparation of these packages with a division

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WCC staff member. As the District Commander or his designated representative makes deviation requests, a Quality Control Certificate is not required for a deviation request. However, a peer review should be performed to assure that the proposed deviation request reflects coherent logic and that the assumptions, scopes, timing are consistent, complete, and reasonable.

## **9. Technical and Policy Issues Needing CESPD Assistance**

It is the ultimate responsibility of the District Section/Branch Chief who manages the water control management activities to highlight to the Division WCC any policy issues that require attention within the water control management arena, including, but not limited to review of Water control management documents.

## **Appendix E REAL ESTATE SUBPLAN**

### **1. Purpose**

This appendix provides the general policies and procedures for the execution of quality assurance activities in the Real Estate Division, Engineering and Technical Services Directorate (DETS), South Pacific Division (CESPD), and of quality control activities in the Real Estate Divisions of the Districts within the South Pacific Division. This subplan supplements the main plan.

Main Body of Appendix E	Quality Management of Real Estate Products
Enclosure 1	Quality Assurance Review Checklist
Enclosure 2	Real Estate Performance Indicators

### **2. Applicability**

2.1. This appendix applies to all activities of the Real Estate Division, DETS, and CESPD Districts having real estate responsibilities.

2.2. The quality management process applies to all real estate services and products, including those real estate subproducts which are integral parts of decision and implementation documents developed as part of the civil planning and engineering programs, including the following:

2.2.1. Real Estate Design Memoranda and Real Estate Planning Reports

2.2.2. Appraisal reports

2.2.3. LERRDs crediting determinations

2.2.4. Last Resort Housing determinations

2.2.5. Acquisition and disposal instruments

2.2.6. Inlease and outgrant instruments

2.2.7. Utilization and Compliance Inspection reports

2.2.8. Condemnation assemblies

2.2.9. Attorney's opinions of compensability

2.2.10. Physical takings analysis

2.2.11. Real Estate Appendices to planning and engineering documents

2.2.12. Executive Order Surveys

2.3. Real Estate provides significant input to documents managed by other functional organizations. The technical review processes for these documents are described in the other appendices to this division office memorandum.

### **3. References**

3.1. CECG/AASA(CE) Joint Memorandum, dated 31 March 1995, Subject: Technical Review Process

3.2. CECW-A Policy Memorandum No. 2, dated 6 April 1995, Subject: Civil Works Decision Document Review -- Policy Compliance

3.3. ER 405-1-12, Real Estate Handbook

3.4. HQ USACE Real Estate Policy Guidance Letters

### **4. Definitions**

4.1. Design Checks and Other Internal Review Processes: Detailed review and checking which must be carried out as routine management practices in Real Estate divisions. Such review includes checking to assure basic assumptions are valid, decisions are properly documented, and calculations are error free. These checks are performed by staff responsible for the work and shall be performed prior to conducting independent technical reviews.

4.2. Independent Technical Review: Independent technical review by a qualified realty specialist, appraiser, or attorney. Such reviews are required reports, memoranda, and other documents that are an integral parts of Civil Works project documents.

4.3. Real Estate Manager: The district real estate individual assigned responsibility for guiding the development of the real estate product and coordinating with the district's other technical organizations.

### **5. District Quality Control Responsibilities**

5.1. Objective: District Real Estate Divisions shall be responsible for developing and following quality control management practices and business procedures to insure the quality of real estate products and services. These objectives shall be met by development and execution of District Real Estate Quality Management and Quality Control Plans.

5.2. Quality Management Plan (QMP): District Real Estate Divisions shall establish, and update annually, a Real Estate QMP or the real estate portion of the District's QMP which complies with the policies and principles presented in this memorandum and in applicable USACE

regulations. District QMP's will establish the roles, responsibilities and processes of district Real Estate divisions for each major real estate function and activity. The QMP shall be reviewed and approved by CESPD-ET.

5.3. Quality Control Plan (QCP): District Real Estate Divisions shall prepare a Quality Control Plan (QCP) for each of the real estate products listed in paragraph 2b of this appendix. These QCP's shall be updated as warranted. QCP's shall be developed immediately for real estate products currently under development. Single QCP's shall also be developed which encompass all real estate aspects of each major real estate function and activity.

5.4. Quality Control Activities:

5.4.1. Responsibilities: The District Chief of Real Estate shall have overall responsibility for the technical quality of real estate products and services within Real Estate Division. Other subordinate managers, leaders, and individuals within Real Estate Divisions also have significant roles and responsibilities in achieving quality products and services. The roles and responsibilities of these individuals shall be described in the district's Real Estate Quality Management Plan and shall include the responsibilities outlined in this appendix.

5.4.2. Independent Technical Review: Independent technical review is applicable to only those reports, memoranda, and other documents prepared by real estate that are an integral part of a Civil or Military Works decision or implementation document. Key to the successful execution of the quality control process for the products developed by Real Estate Division and its contractors is the independent technical review of a product. This review shall be accomplished by real estate individuals having expertise in disciplines involved in the type of product being developed and reviewed, and who were not involved in the product development.

5.4.3. Qualifications of Technical Reviewers: District real estate personnel who perform technical reviews must possess the knowledge, skills, and abilities to be able to identify shortcomings and deficiencies in real estate products and services, and to determine the appropriate corrective actions. Supervisory personnel may perform technical reviews, but are not authorized to perform technical review of the work of their subordinates. A copy of the technical capability profile, with a statement that the individual performing the technical review has been approved to do so, will be part of the district's QC plans. Developmental plans and training plans of technical reviewers will be reviewed during annual Command Assistance Visits and other staff visits.

5.4.4. Dispute Resolution: The District Chief of Real Estate shall facilitate resolution of disagreements between technical reviewers and subordinate supervisors within the Real Estate Division. If this interaction does not resolve the issue, the final decision will be made by the District Chief of Real Estate. The District Chief of Real Estate may consult with the CESPD Chief of Real Estate, who may serve as an unbiased sounding board; or major real estate issues may be forwarded to CESPD-ET-R for resolution or clarification.

5.4.5. Products Developed by Contractors: Some real estate products may be developed by other than in-house staff, noted herein as contractors. For real estate products developed by

contractors, the quality control activities noted in this subplan, including development of a quality control plan, shall be the responsibility of the contractor. Quality assurance activities, including development of a quality assurance plan for a contractor's product, shall be responsibility of the District Real Estate Division. The Chief of Real Estate, CESPD will exercise oversight of the District's quality assurance activities and the contractor's quality control activities.

**5.4.6. Final Documentation and QC Certification:** Real estate quality control processes must be fully documented. Significant comments, issues, and decisions must be recorded to ensure a clear audit trail. Documentation of real estate technical review activity and other quality control processes prescribed in the district's Quality Control Plan for specific Civil or Military Works studies or products shall be included with studies or products submitted to CESPD.

**5.4.7. Updating of Quality Control Plans:** Real Estate quality control plans shall be updated whenever significant changes to any element of a plan occurs.

**5.4.8. Use of Checklists:** Checklists may be used to guide the real estate technical review and ensure that critical items are not overlooked. Checklists may also be used to simplify the documentation of the review. The use of checklists in the documentation would not, however, eliminate the requirement to document specific comments or decisions.

## **6. CESPD Quality Assurance Responsibilities**

**6.1. Responsibilities:** The Chief Real Estate Division at CESPD shall be responsible for reviewing and approving districts' Real Estate Quality Management Plans, for the conduct of quality assurance activities to ensure district compliance with this plan and for recommending changes in district real estate divisions' quality management and quality control processes, as needed, to assure that:

6.1.1. Mechanisms and procedures are in place to enable district real estate divisions and their contractors to produce quality real estate products.

6.1.2. District real estate divisions and their contractors develop quality control plans that are at an appropriate level of detail, are consistent with guidance provided, and provide for documentation of quality control actions, including reviews, comments, and resolution of issues.

**6.2. Quality Assurance Activities:** At CESPD, the Chief, Real Estate Division is responsible for the following quality assurance activities:

6.2.1. Providing technical guidance concerning the district's real estate programs and activities.

6.2.2. Developing procedures and guidelines for accomplishing interdisciplinary real estate activities.

6.2.3. Assuring quality of district technical review programs for real estate studies, reports and activities.

6.2.4. Approving the district's QMPs for real estate services and products, and certifying the adequacy of real estate components of other district QCPs.

6.2.5. Providing technical and real estate support to the districts, as requested, and providing assistance to districts in resolving major technical issues.

6.2.6. Assuring existing policies are implemented and adhered to in developing district real estate products and conducting real estate procedures. Facilitating resolution of policy issues with HQUSACE and others.

6.2.7. Participating in issue resolution conferences.

6.2.8. Forwarding district real estate documents to HQUSACE for policy review and processing, and providing oversight of the Washington-level review.

6.2.9. Assuring the adequacy of real estate input into environmental impact statements and other documents which demonstrate MSC compliance with environmental statutes.

6.2.10. Monitoring customer satisfaction with district real estate products and services.

6.2.11. Leading the real estate portion of the command assistance program.

## **7. Quality Assurance Process**

In addition to the oversight of the real estate technical review process as indicated above, quality assurance by the division will include the following:

7.1. Informal Consultation: The cornerstone of CESPD-ET-R's role in quality assurance is to provide informal consultation regarding technical and policy issues. Such consultations will serve to ensure that district real estate activities are in compliance with approved quality control plans and to resolve quickly technical and policy issues.

7.2. In-Progress Conferences: Real estate participation in these conferences will be a significant element of the division's quality assurance program. This will serve to ensure that appropriate coordination is occurring between district real estate divisions and other technical divisions, that the district's real estate efforts are timely, appropriate, and in compliance with the real estate quality control plan.

7.3. Review of Sample Products: CESPD-ET-R will conduct oversight reviews of selected real estate products produced by the district real estate divisions. These reviews are for the purpose of identifying systemic problems, trends and possible improvements to the process, and assure compliance with current policy.

7.4. Issue Resolution Conferences: CESPD-ET-R will participate in issue resolution conferences when district real estate divisions request technical assistance or policy guidance,

to address issues raised as a result of real estate quality assurance activities, and at mandatory issue resolution conferences.

7.5. Technical Workshops: Training, technology transfer, and promotion of innovation often do not get the attention that is required because of the press of ongoing work. These activities can be addressed in technical workshops which can be arranged on a recurring basis by the Division Real Estate Chief.

7.6. Monitoring/Fostering Technical Competency: CESPD-ET-R quality assurance role includes evaluating the technical competency of district real estate division's staff charged with technical review responsibilities. Should real estate technical review support be required from another district, CESPD-ET-R will coordinate efforts to obtain such support.

7.7. Command Assistance Visits: During command assistance visits, reviews will be made to ensure that district real estate divisions comply with the provisions of this subplan and of district real estate quality control plans.

**ENCLOSURE 1**  
**QUALITY ASSURANCE REVIEW CHECKLIST**

1. Disciplines/areas involved in specific item reviews are identified as:
  - Real estate management - (Z)
  - Legal - (L)
  - Acquisition - (A)
  - Management and Disposal -
  - Appraisal - (F)
  - Planning and Control - (P)
  - HAP-(H)
  - Covers all disciplines/areas - (X)
2. District:
3. Dates of Review:
4. Reviewers:
5. Persons Contacted:
6. Contents:

Main Report: Process and Product Quality Ratings

Attachment 1: Coordination Checklist

Attachment 2: General Comments on QA Review

Attachment 3: Comments on QA items marked "NO" or "N/A"

### **PROCESS QUALITY RATINGS**

1. The District Real Estate Division has approved Quality Control Plans (QCP) for all real estate products and programs. (X) YES \_\_\_\_\_ NO \_\_\_\_\_ N/A \_\_\_\_\_
2. QCP are reviewed and updated law the provisions of Appendix F, Real estate Sub Plan, CESPD Regulation 11 10-1-8, Quality Management Plan. (X) YES \_\_\_\_\_ NO \_\_\_\_\_ N/A \_\_\_\_\_
3. Actual technical production is conducted in accordance with approved QCP. (X) YES ----- NO ----- N/A
4. Quality assurance operations include sufficient focus on customer's needs concerns. and satisfaction. (X) YES ----- NO ----- N/A-----
5. Competent real estate staff exists in all functional areas to ensure satisfactory performance of the District's assigned real estate missions and to ensure proper use of delegated real estate authorities. (Z) YES -----NO----- N/A-----
6. Real Estate team members receive necessary training to develop professionally (i.e., continuing education for 905's; training in accordance with EP 690-1-810 for 1170's and 1171's etc.) (Z) YES-----NO-----N/A-----
7. The District provides assistance to its appraisers in obtaining and maintaining state certification through training, awards, recognition, and monitoring courses completed/still required for certification. (Z) (E) YES-----NO----- N/A-----
8. The District completes its civil and military real estate acquisition activities, meeting schedules and within budget. (QA review will focus on prior FY and current FY scheduled activities, both CMR and non-CMR items, with discussion on issues. problems. and challenges). (A) (P) YES -----NO-----N/A-----
9. The District completes its civil and military real estate management and disposal activities, meeting schedules and within budget. (QA review will focus on scheduled and unscheduled prior FY and current FY activities, both CMR and non-CMR items, with discussion on issues, problems, and challenges). (M) YES -----NO----- N/A-----
10. The District completes its HAP mission, meeting schedules and within budget. (QA review will focus on prior and current FY activities, both CMR and non-CMR items, with discussion on issues, problems. and challenges). (H) YES-----NO ----- N/A-----
11. Real Estate consistently and early on in the project or activity development stage coordinates actions/projects with other District elements, as appropriate. (See Attachment 1, Coordination Checklist). (Z) (A) (M) (P) (L). YES ----- NO ----- N/A-----

### **PRODUCT QUALITY RATING**

1. Assessments of sponsor real estate capability are completed, with checklists documented in files. (A) (P) YES----- NO ----- N/A-----
2. Real Estate participates early on in the District project development process. (Z) (A) (P) (E) YES ----- NO ----- N/A-----
3. Real Estate matches the technical expertise of its team members with project requirements. YES ----- NO ----- N/A-----
4. Real-Estate-furnished schedule and cost projections reflect sound planning both from a schedule and cost estimating or valuation standpoint. (X) YES ----- NO ----- N/A-----
5. District plans covering all project phases indicate certification or concurrence by the Chief of Real Estate. (Z) (A) (P) YES----- NO ----- N/A-----
6. A sample of acquisition or acquisition planning products and programs reflects managerial and technical competence. The following areas were reviewed: (A) (L) (P) YES----- NO ----- N/A-----
  - a. Recruiting program\_\_\_\_\_
  - b. Reserve program\_\_\_\_\_
  - c. In leasing activities\_\_\_\_\_
  - d. Fee/easement acquisition activities\_\_\_\_\_
  - e. Project & planning document input (RES, etc.)\_\_\_\_\_
  - f. Sponsor capability assessments\_\_\_\_\_
  - g. Row certification\_\_\_\_\_
  - h. Negotiations/acquisition documentation\_\_\_\_\_
  - i. Support for others activities\_\_\_\_\_
  - j. Counteroffer activities\_\_\_\_\_
7. A sample of attorney's work products and activities reflects professional competence. The following areas were reviewed: (L) YES----- NO ----- N/A-----
  - a. Attorney's Opinions of Compensability \_\_\_\_\_

- b. Takings Analyses\_\_\_\_\_
- c. Real estate claims\_\_\_\_\_
- d. Closings \_\_\_\_\_
- e. Final title opinions/assemblies\_\_\_\_\_
- f. Litigation reports\_\_\_\_\_
- g. Condemnation documentation/activities\_\_\_\_\_

8. A sample of planning and control products and programs reflects managerial and technical competence. The following areas were reviewed: (P) YES----- NO ----- N/A-----

- a. RFDM/RFPR\_\_\_\_\_
- b. LERRD crediting activities (i.e.: supportable claims and documentation and timeliness {within 60 days for projects in construction phase})\_\_\_\_\_
- c. Budgeting activities\_\_\_\_\_
- d. Real Property Accountability Program\_\_\_\_\_
- e. Receipts coordination\_\_\_\_\_
- f. Mapping/surveys/title contracts\_\_\_\_\_
- g. REMIS\_\_\_\_\_

9. A sample of management and disposal products and programs reflects managerial and technical competence. The following areas were reviewed: (M) YES ----- NO ----- N/A

- a. Outgrant activities\_\_\_\_\_
- b. Fee/easement disposal activities\_\_\_\_\_
- c. Other disposal activities (timber, improvements, etc.)\_\_\_\_\_
- d. Encroachment resolution activities\_\_\_\_\_
- e. Utilization/FO 12512 program\_\_\_\_\_
- f. Compliance inspection program\_\_\_\_\_
- g. RAP (PL 91-646) activities\_\_\_\_\_

h. Rental payment oversight\_\_\_\_\_

i. Disposal/leasing activities\_\_\_\_\_

10. A sample of appraisal products and programs reflects managerial and technical competence. The following areas were reviewed: (F) YES ----- NO ----- N/A

a. Tract appraisals\_\_\_\_\_

b. Gross appraisals\_\_\_\_\_

c. Brief appraisals\_\_\_\_\_

d. Appraisal reviews\_\_\_\_\_

e. Government housing rental updates/activities\_\_\_\_\_

f. Opinions of value oversight\_\_\_\_\_

g. BRAC appraisal activities\_\_\_\_\_

11. A sample of the HAP program and its products reflects managerial and technical competence. The following areas were reviewed: (H) YES ----- NO ----- N/A-----

a. PIR/MIS/MIR activities\_\_\_\_\_

b. Timeliness of benefit payments\_\_\_\_\_

c. HAP disposal activities\_\_\_\_\_

d. Property management activities\_\_\_\_\_

## **ATTACHMENT 1**

### **COORDINATION CHECKLIST**

ENG = Engineering  
PLN = Planning  
CON = Construction  
OPN = Operations  
P0 = Project Office  
PPMD = Planning and Project Management  
RM = Resource Management  
OC = Office of Counsel

### **REAL ESTATE COORDINATION WITH OTHER ELEMENTS**

(Indicate by check mark which elements Real Estate coordinates with)

ENG PLN CON OPN P0 PPMD RM OC

Outgrants (new, renewals, and major modification)  
Rental receipts/status  
Fee disposals  
Endorsement basemsement disposal &  
Release of HHR  
Timber/building sales  
Sand, gravel, crops, etc.  
Utilization/EO 12512 activities  
Compliance inspections  
RPA activities  
Lease planning reports  
Cost-shared project negotiations  
ROW certification  
REDM  
Atty. Reports of Compensability  
Takings Analyses  
Real estate claims  
Closings  
Litigation reports  
Lease protests  
Sponsor RE capability assessments  
RES' to project planning reports

**COORDINATION BY OTHER ELEMENTS WITH REAL ESTATE**

(Do other District organizations coordinate the following with Real Estate)

Master Plans  
OMP  
PCA  
Planning/project reports  
Budget requests/activities  
Cost-share ROW drawings  
Rental receipts/status  
RPA activities  
Requests for ROE  
SF0 activities  
Installation support activities

**ATTACHMENT 2**

GENERAL COMMENTS ON QA REVIEW

**ATTACHMENT 3**

COMMENTS ON QA ITEMS MARKED "NO" OR N/A

## **ENCLOSURE 2**

### **REAL ESTATE PERFORMANCE INDICATORS**

#### **1. Recruiting Facilities Program**

A program in which the District Real Estate Division leases facilities to meet the needs of the DOD Recruiting Commands. Reference ER 405-1-12.

Standards: (A) Leasing actions comply with all legal and regulatory requirements, including the documentation, in files, of market surveys and preliminary assessment screenings/environmental baseline surveys; and, (B) at least 95% of scheduled actions are completed.

Does Not Meet Standards: (A) Less than 100% compliance with legal and regulatory Requirements, and (B) less than 95% completion of scheduled actions.

#### **2. Direct Federal Acquisition Program**

A program whereby the District Real Estate Divisions acquire fee and easement interests in real estate to meet federal real property acquisition requirements for civil (non cost-shared), military (Army and Air Force), and SF0 projects. Reference ER 40--1-12.

Standard: Acquisition actions fully comply with all legal and regulatory requirements. Acquisitions are completed on schedule and within budget.

Does Not Meet Standard: Less than 100% compliance with legal and regulatory requirements and less than 90% schedule and cost variance.

#### **3. Encroachments**

Districts must resolve encroachments, which involve the illegal use of Government real property by adjoining landowners, through removal, outgranting, or disposing of the underlying property. Reference ER 405-1-12.

Standard: All encroachments resolved by outgrant or disposal must have documentation in the files indicating proper consideration was assessed and collected, outgrant/disposal documents were legally sufficient, and environmental compliance was performed and documented.

Does Not Meet Standard: Less than 100% compliance with the rating criteria does not meet the standard.

#### **4. Agricultural and Grazing Leases**

A management practice whereby suitable lands are outleased for agricultural crop production or livestock grazing. Reference ER 405-1-12.

Standards: (A) Proper regulatory requirements are followed, to include preparation of Reports of Availability, when required. Compliance inspections are conducted with required frequency and fully documented. (B) Appropriate rental consideration is assessed, with all revenues due collected or under collection action and actual rental receipts/offsets are within ranges established at the beginning of the FY.

Does Not Meet Standards: (A) Less than 100% compliance with regulatory/ROA requirements or less than 80% compliance with inspection criteria; and, (B) less than 100% compliance with rental collection criteria or less than 89% accomplishment of projected receipts/offsets targets.

#### **5. Commercial Concession Audits**

A management practice involving the audit of receipts from property outleased for commercial operation of marinas and campgrounds. Reference ER 405-1 - 12 and FIG Real Estate Inspection Report, 27 Sep 96. (NOTE: This requires support from District Audit Office and DCAA)

Standard: At least one commercial concession is audited annually.

Does Not Meet Standard: Less than 100% compliance with the rating criteria does not meet the standard.

#### **6. Quality Control Plans (QCP)**

QCP developed to ensure District real estate products/reports are completed-Wd technically correct. Reference ER 405 - 1 - 12 and SWDETR QAP (Appendix F).

Standard: Approved and current QC Plans, either generic or project specific, are being used for all real estate products, and include, as a minimum, a brief process description, checklist, and a list of production and reviewing employees.

Does Not Meet Standard: Less than 100% compliance with the rating criteria.

#### **7. Real Property Accountability/Reconciliation**

A CFO item involving reconciliation of the Real Property Subsidiary Ledger data/cost records with the General Ledger records through REMIS/CEFMS interface. Reference Chief Financial Officers Act.

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Standard: An initial 100% inventory of real property at each project has been completed, with subsequent physical inventories scheduled/performed on 3-year cycles; subsidiary and general ledgers remain updated, and SOP for maintaining reconciliation are in place and operational.  
Does Not Meet Standard: Less than 100% compliance with the rating criteria.

## **8. Crediting for Real Estate**

The process involving Real Estate Division review and approval of real estate credits claimed by project sponsors. Reference ER 405-1-12.

Standard: Properly documented credit requests received during the FY are approved within 60 days of receipt for projects in the construction phase. Project files demonstrate approvals were based on approved appraisals, proper documentation, and reasonable administrative costs.

Does Not Meet Standard: Less than 100% compliance with the rating criteria.

## **9. Regional Teamwork/Coordination**

A process in which the District Chief of Real Estate, in coordination with SPD-ET-R, actively pursues opportunities for performing work for other Districts or for providing work to other Districts in SPD to assist in balancing Division resources, workload, and priorities.

Standard: The District routinely coordinates with SET-R and the other SWD District Real Estate Divisions regarding availability or need to provide/receive real estate support and services.

Does Not Meet Standard: The District does not coordinate as described in the standard.

## **Appendix F CONSTRUCTION - OPERATIONS SUBPLAN**

### **1. Purpose**

This appendix provides the general policies and procedures for the execution of quality management activities in the Construction-Operations Division, Engineering and Technical Services Directorate (DETS), South Pacific Division and of the Construction-Operations Divisions of the Districts within the South Pacific Division. Guidance provided includes:

Main Body of Appendix F	Quality Management of Construction-Operations Activities/Products
Enclosure 1	QM Guidance on Construction
Enclosure 2	QM Guidance on Regulatory Functions
Enclosure 3	QM Guidance on Operations and Readiness Function

### **2. Applicability**

2.1.1. This plan applies to construction-operations activities within CESPD and its districts, including those associated with civil works, OMA, MILCON, HTRW, FMS, WFO and SFO. The quality management process applies to all Construction, Operations and Regulatory and Readiness services and products, including those reports and other sub-products which are integral parts of decision and implementation documents developed as part of the planning, engineering and other programs.

## **Enclosure 1**

### **QUALITY MANAGEMENT GUIDANCE ON CONSTRUCTION**

#### **1. Purpose**

This plan provides South Pacific Division's annual construction quality assurance organizational operating plan pursuant to ER 1180-1-6 (Construction Quality Management).

#### **2. Applicability**

This plan applies to construction activities within CESPD and its districts. Construction programs include civil works, OMA, MILCON, HTRW, FMS, WFO and SFO.

#### **3. Organization**

3.1. Within CESPD, construction quality assurance is the responsibility of CESPD-ET-C (Construction-Operations Division). Construction-Operations Division is currently staffed by three construction managers. Program responsibilities are divided among the three construction managers as follows: 1 Military Construction Manager, 1 Civil Works Construction Manager, and 1 HTRW/SFO/WFO Construction Manager.

3.2. Staffing needs: no additional staffing needs are presently projected; however, pending reorganization plans may require an updated analysis within FY 00.

#### **4. Responsibilities**

4.1. CESPD-ET-C shall review and recommend approval of each district's annual quality assurance plan (required per ER 1180-1-6) prior to its being forwarded to HQUSACE.

4.2. CESPD-ET-C shall make periodic visits to district and field offices to verify that QA plans are in place and are effective.

4.3. CESPD-ET-C shall manage Division S&A targets, construction placement and expenses in coordination with District Construction Divisions and the Regional Management Board (RMB) according to CESPD R 415-1-6. CESPD-ET-C is responsible for the stewardship of the S&A regional accounts, financial reporting and analyzing fiscal data related to actual S&A income and expense reports. The RMB and Division Commander approve the District's budgets.

4.4. Design Construction Evaluations (DCE). As of 1 October 1998, HQUSACE no longer conducts DCEs. As part of CESPD's quality assurance responsibilities, CESPD-ET-E and CESPD-ET-C shall jointly be responsible for execution of the DCE program within CESPD that conforms to the requirements prescribed in ER 1110-1-12 and ER 415-1-13. The DCE program generally shall utilize the processes in the QA Focus Areas outlined in the Main Body of this

QMP. DCE visits shall be conducted according to Regulation CESPD R 1110-1-10 dated 20 August 1999.

4.5. CESPD-ET-C shall participate in annual Command Assistance Visits to each district and will evaluate district QA plans as part of that visit.

4.6. CESPD-ET-C shall participate in the Lab certification process.

4.7. Each construction manager will provide construction expertise to District Support Teams (DST) according to his or her assigned areas. A main focus of this DST participation shall be to ensure that the special needs of the field offices for timely responses to required actions is provided by the DSTs.

4.8. As part of the evaluation of District performance, CESPD-ET-C will determine the degree to which the District Construction Branch and field offices practices conform to the Regional Project Management Business Process (RPMBP). This evaluation shall focus on SOP 3C, PM/Construction Manager Roles and Responsibilities, but shall also include the other RPMBP requirements.

## **5. Training**

5.1. Planning: training plans (including both organizational unit and individual development plans) within CESPD-ET-C will evaluate both technical and management training needs to assure maintenance of technical expertise and construction management expertise of construction managers to facilitate their quality assurance roles.

5.2. Facilitation: CESPD-ET-C personnel will continue to facilitate QA training within SPD. Emphasis during this planning period will be on continuation of HTRW Manifest Training facilitation, HTRW safety refresher training and on facilitation of testing training. Districts shall have primary responsibility for the QA/QC labs are certified in accordance with established USACE and CESPD policies.

5.3. Districts shall be required to maintain training matrices that display which personnel have what QA expertise within each field office.

## **6. Pre-award QA**

6.1. CESPD-ET-C shall participate in all Advance Acquisition Planning Conferences.

6.2. Districts shall have primary responsibility for pre-award construction QA activities including BCOE reviews, Plan-In-Hand reviews, Independent technical review Teams (ITRT), input to special contract provisions, and design review conferences. However, CESPD QA shall on occasion include participation in any of the foregoing activities on a "spot check" or as-requested basis. CESPD-ET-C shall evaluate the participation of District construction representatives in these activities.

6.3. CESPD-ET-C shall participate in project working groups as required.

## **7. Post-award QA**

7.1. Districts shall have primary responsibility for post-award QA activities including QA reporting, participation in the 3 phase inspection system, ad hoc problem solving, deficiency monitoring, QA testing, construction safety, and schedule maintenance. However, CESPD QA shall on occasion include participation in any of the foregoing activities on a "spot check" basis. CESPD QA personnel shall provide exit briefs to responsible district personnel after any spot checks and shall include in the briefs both deficiencies noted and recommended solutions.

7.2. CESPD-ET-C shall manage those programs that recognize outstanding achievement in quality assurance, e.g. the Hard Hat of the Year award, the Construction Manager of the Year award, the Military Construction Contractor of the Year award, the Civil Works Construction Contractor of the Year award, and the Dredging Contractor of the Year award.

7.3. The review and approval responsibility for construction quality control plans has been delegated by CESPD to the districts.

7.4. CESPD-ET-C shall identify selected District technical personnel to act as Division representatives when needed to supplement CESPD-ET-C expertise.

## **8. Supplements**

8.1. CESPD-ET-C shall assure that each district annually supplements ER 1180-1-6 with its own QA plan. District QA plans shall be due in Division no later than the close of the first month of each fiscal year.

8.2. CESPD-ET-C shall combine annual district QA plans with the annual CESPD-ET-C QA plan and forward all plans to HQUSACE in accordance with ER 1180-1-6.

## **Enclosure 2**

### **QUALITY MANAGEMENT GUIDANCE ON REGULATORY FUNCTIONS**

#### **1. Purpose**

This enclosure provides the general policies and procedures for the execution of quality assurance activities in the Regulatory Program Office, Construction-Operations Division, Directorate of Engineering and Technical Services, South Pacific Division (CESPD-ET-C) and of quality control activities in the Regulatory Branches of the Districts within the South Pacific Division.

#### **2. Applicability**

This appendix supplements the guidelines provided in the main body of the Quality Management Plan and applies to all regulatory functions, activities, and products of the Construction-Operations Division, DETS, and CESPD District Regulatory Branches. The policy of CESPD-ET-C is to provide quality regulatory products and services to the regulated community and all other interested parties, consistent with all applicable laws, regulations, and the public interest. The Districts are responsible for the preparation of regulatory products and the quality control necessary to produce those products. CESPD-ET-C is responsible for quality assurance of the Regulatory Program, and the products and services provided.

#### **3. References**

This appendix implements portions of the guidance presented in the following regulations:

- 33 CFR Part 325, Appendix C
- 33 CFR Part 325, Appendix B
- 33 CFR Parts 320-330
- 50 CFR Part 402
- 40 CFR Part 230

#### **4. Definitions**

The definition of terms used in this appendix are generally consistent with the definitions provided in the DETS Quality Management Plan. Within the text of this appendix, certain definitions are expanded upon to place them in a context appropriate for the Regulatory Program.

#### **5. Relationship of the Division and Districts**

5.1. Division: CESPD-ET-C is responsible for quality assurance for all regulatory functions accomplished by the Districts. CESPD-ET-C shall review and approve the regulatory functions

portion of each District's Quality Management Plan; provide oversight of the quality control process at each District; and provide policy review for regulatory functions and products within CESPD

5.2. Districts: Each District Regulatory Branch is responsible for controlling the quality of all work they accomplish, including standard and general permits, jurisdictional determinations, enforcement actions, and permit compliance. To assist in the achievement of high quality regulatory products, the Districts shall develop, carry out, and keep up to date their own Quality Management Plans, as described in the DETS Quality Management Plan. The Quality Management Plans shall establish District roles, responsibilities, and processes consistent with this appendix. Districts shall also be responsible for the development and implementation of Quality Control Plans for regulatory functions, activities, and products covered by this appendix.

## **6. Division Quality Assurance Responsibilities**

6.1. Regulatory Program Manager: At CESPD-ET-C, the Regulatory Program Manager is responsible for the quality assurance of the Regulatory Program, including but not limited to the following activities:

6.1.1. Providing technical and policy oversight of the District's Regulatory Programs.

6.1.2. Developing procedures, guidelines, and implementing instructions for accomplishing regulatory mission activities within CESPD.

6.1.3. Reviewing and approving the Districts' Quality Management Plan for Regulatory Branch functions.

6.1.4. Providing technical guidance and regulatory policy support to the Districts, as requested. Providing assistance to the Districts in resolving major technical and/or policy issues.

6.1.5. Assuring current policies are implemented in District regulatory products. Facilitating resolution of policy issues with HQUSACE and others.

6.1.6. Recommending Division Commander approval of Regulatory Program activities that have been delegated to CESPD.

6.1.7. Evaluating Regulatory Program performance indicators.

6.1.8. Leading the regulatory portion of the Command Assistance Program.

## **7. District Quality Control Responsibilities**

Regulatory Branch Chiefs, Section Chiefs, and Regulatory Project Managers all have significant roles and responsibilities in achieving quality regulatory products. The roles and responsibilities of all participating individuals shall be described in the District's Quality Management Plan and Quality Control Plans, and shall include the responsibilities described below.

7.1. Regulatory Branch Chiefs: The Branch Chiefs shall have the overall responsibility for the technical quality of regulatory products. It will be the responsibility of the Branch Chief to assure that the Quality Management/Control Plan is implemented and that any discrepancies discovered as a result of training, audits, field evaluations, or Command Assistance Visits are corrected.

7.2. Section Chiefs: Quality control is the appropriate evaluation of regulatory products, services, and processes to ensure that they meet the requirements of, and are in compliance with all applicable laws, regulations, and recognized technical practices of the disciplines involved. In large part, this shall be accomplished by the Section Chiefs through their independent review process of staff actions and products.

7.3. Quality Control Plans: Regulatory Branch Quality Control Plans shall be prepared by each District, and should rely heavily on their approved Quality Management Plans, through reference, and highlight only exceptions. The review and approval responsibility for QCPs has been delegated by CESPD to the district. A Quality Control Plan shall, as a minimum, include the following:

7.3.1. A statement of the Quality Control Plan objectives.

7.3.2. A statement of the applicable regulations and guidelines, and regulatory actions and products covered by the plan.

7.3.3. A statement of the quality control criteria, consistent with established regulations and policies, to evaluate the acceptability of regulatory products and actions produced by the Branch, including but not limited to, the proper application of regulations, guidance, and procedures; appropriate protection of the aquatic environment; and efficiency of actions consistent with established timeliness goals.

7.3.4. A statement of actions taken to insure that all Regulatory Branch products and actions meet the above identified criteria, such as training, audits of completed actions, and field evaluations of staff skills in making accurate jurisdictional determinations, including but not limited to, wetland delineations, ordinary high water mark determinations, and any other field skills required to perform their duties as Regulatory Project Managers.

7.4. Product Review:

7.4.1. Products: The Quality Control Plan shall identify all regulatory products and actions produced by Regulatory Project Managers to be reviewed by Section and Branch Chiefs. These products include, but are not limited to: Standard Permits, General Permits, jurisdictional determinations, including wetland delineations, enforcement actions, and permit compliance. These products shall be essentially complete before review is undertaken, and the Section and Branch Chiefs shall be responsible for the technical and policy accuracy of all products and resultant decisions

## **8. Quality Assurance Process**

In addition to the oversight of technical and policy issues indicated above, quality assurance by CESPD-ET-C shall include, but not be limited to, the following activities:

- a. Informal Consultation.
- b. Review of Sample Regulatory Products.
- c. Issue Resolution.
- d. Technical Workshops.
- e. Monitoring Technical Competency.

**Enclosure 3**  
**QUALITY MANAGEMENT GUIDANCE ON**  
**OPERATIONS AND READINESS FUNCTION**

**1. Purpose**

This appendix provides the general policies and procedures for the execution of quality assurance activities in the Construction-Operations Division, Operations and Readiness Branch, Engineering and Technical Services Directorate (DETS), South Pacific Division, and of quality control activities for the Operations and Readiness functional elements in the CESPD Districts.

**2. Applicability**

2.1. This appendix supplements the guidelines provided in the main body of the Quality Management Plan and applies to all activities of the Construction-Operations Division, DETS and CESPD Districts having responsibility for Operations and Readiness activities.

2.2. The quality management process applies to all Operations and Readiness services and products, including those sub-products which are integral parts of decision and implementation documents developed as part of the Planning, Engineering and Operations and Readiness programs including the following:

2.2.1. Planning Reports (Reconnaissance, Feasibility, etc.)

2.2.2. Engineering Reports (Design Memorandums, etc.)

2.2.3. Operations & Readiness Reports

2.2.4. Rehabilitation Reports

2.3. Operations and Readiness Reports include Reservoir Regulation Manuals/Plans, Periodic Inspection Reports, Dam Safety Emergency Action Plans, Water Quality Management Plans, Operations and Maintenance Manuals, Master Plans and Operational Management Plans with their associated Updates, Supplements and Amendments. The technical review processes for all documents are described in the other appendices to this Division office memorandum.

2.4. Exception. Due to its special requirements, Natural Disaster Procedures are classified as a unique function of the Corps as described in the Division Organizational Guidelines. Quality assurance and quality control of these products shall be performed at CESPD as prescribed in the existing engineering regulations and guidance and following the general quality management principles set forth in this quality management plan. (See also the Engineering Subplan for additional guidance on quality control of flood recovery efforts.) ER 500-1-1 prescribes the policies for the Disaster Preparedness and Response Program with ER 50-1-26 providing a comprehensive evaluation process for this program. Checklists have been

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developed as part of both ER 500-1-1 and ER 500-1-26 to validate readiness-oriented activities and to provide MSCs with a consistent means of evaluating District Response Plans.

### **3. References**

- 3.1. ER 500-1-1, Natural Disaster Procedures
- 3.2. ER 500-1-26, Evaluation and Corrective Action
- 3.3. ER 1110-1-12, Quality Management
- 3.4. EC 1165-2-203 Implementation of Technical Policy Compliance Review.
- 3.5. EP 37-1-6 Resource Management Functional Guide
- 3.6. CECG/AASA(CE) Joint Memorandum, dated 31 March 1995, Subject: Technical Review Process
- 3.7. CECW-A Policy Memorandum No. 2, dated 6 April 1995, Subject: Civil Works Decision Document Review -- Policy Compliance

### **4. Definitions**

See main Quality Management Plan.

### **5. District Quality Control Responsibilities**

5.1. Objective: District Operations and Readiness activities shall be responsible for developing and following quality control management practices and business procedures to insure the quality of Operations and Readiness products and services. These objectives shall be met by development and execution of District Operations and Readiness Quality Management and Quality Control Plans.

5.2. Quality Management Plan (QMP): District Operations and Readiness activities shall establish, and update annually, an Operations and Readiness QMP or the Operations and Readiness portion of the District's QMP which complies with the policies and principles presented in this memorandum and in applicable USACE regulations. District QMPs will establish the roles, responsibilities and processes of District Operations and Readiness activities for each major Operations and Readiness function and activity. The QMP shall be reviewed and approved by CESPD.

5.3. Quality Control Activities:

5.3.1. Responsibilities: The District Chief of Construction-Operations shall have overall responsibility for the technical quality of Operations and Readiness products and services. Other subordinate managers, leaders, and individuals within Operations and Readiness Branch

also have significant roles and responsibilities in achieving quality products and services. The roles and responsibilities of these individuals shall be described in the District's Operations and Readiness Quality Management Plan.

5.3.2. Independent Technical Review: Independent technical review is applicable to only those reports, memoranda, and other documents prepared by Operations and Readiness that are an integral part of a Civil Works decision or implementation document. Key to the successful execution of the quality control process for the products developed by Operations and Readiness Branch and its contractors is the independent technical review of a product. This review shall be accomplished by individuals having expertise in disciplines involved in the type of product being developed and reviewed, and who were not involved in the product development.

5.3.3. Products Developed by Contractors: Some Operations and Readiness products may be developed by other than in-house staff, noted herein as contractors. For Operations and Readiness products developed by contractors, the quality control activities shall be the responsibility of the contractor. Quality assurance activities, including development of a quality assurance plan for a contractor's product, shall be the responsibility of the District Operations and Readiness activities. The Chief of Construction-Operations, CESPD, will exercise general oversight of the District's quality assurance activities.

## **6. CESPD Quality Assurance Responsibilities**

6.1. Responsibilities: The Chief of Construction-Operations at CESPD shall be responsible for reviewing and approving the Districts' Operations and Readiness Quality Management Plans, and quality assurance plans for contracted Operations and Readiness work; for the conduct of quality assurance activities to ensure District compliance with this plan and for recommending changes in District Operations and Readiness activities quality management and quality control processes, as needed, to assure that:

6.2. Quality Assurance Activities: At CESPD, the Chief, Construction-Operations is responsible for the following quality assurance activities:

6.2.1. Providing technical guidance concerning the District's Operations and Readiness programs and activities. This includes conducting site inspections of project O&M activities to assess effectiveness of support given to Water Resources project sites and visitors centers.

6.2.2. Developing procedures and guidelines for accomplishing interdisciplinary Operations and Readiness activities. Also administer the Navigation, Recreation, Natural Resources, Environmental Compliance and Flood Control O&M Programs.

6.2.3. Assuring quality of District technical review programs for Operations and Readiness studies, reports and activities. Includes all recreation and natural resources studies, Master Plans, Operational Management Plans and Environmental Assessment reports. Selected spot checks will be accomplished to assess the District Quality Control Program.

- 6.2.4. Approving the District's QMPs for Operations and Readiness services and products.
- 6.2.5. Assuring existing policies are implemented and adhered to in developing District Operations and Readiness products and conducting Operations and Readiness procedures. Facilitating resolution of policy issues with HQUSACE and others.
- 6.2.6. Participating in issue resolution conferences.
- 6.2.7. Forwarding District Operations and Readiness documents to HQUSACE for policy review and processing, and providing oversight of the Washington-level review.
- 6.2.8. Assuring the adequacy of Operations and Readiness input into environmental impact statements and other documents, which demonstrate MSC compliance with environmental statutes.
- 6.2.9. Monitoring customer satisfaction with District Operations and Readiness products and services.
- 6.2.10. Leading the Operations and Readiness portion of the command assistance program.
- 6.2.11. Participating in District Support Teams.

## **7. Quality Assurance Process**

In addition to the oversight of the Operations and Readiness technical review process as indicated above, quality assurance by the Branch will include the following:

- 7.1. Informal Consultation: The cornerstone of CESPD-ET-C's role in quality assurance is to provide informal consultation regarding technical and policy issues. Such consultations will serve to ensure that District Operations and Readiness activities are in compliance with approved quality control plans and to quickly resolve technical and policy issues.
- 7.2. Review of Sample Products: CESPD-ET-C will conduct oversight reviews of selected Operations and Readiness products produced by the District Operations and Readiness activities. These reviews are for the purpose of identifying systemic problems, trends and possible improvements to the process, and assure compliance with current policy.
- 7.3. Issue Resolution Conferences: CESPD-ET-C will participate in issue resolution conferences when District Operations and Readiness activities request technical assistance or policy guidance to address issues raised as a result of Operations and Readiness quality assurance activities.
- 7.4. Technical Workshops: To promote technology transfer and exchange of ideas on innovative technologies, CESPD-ET-C will host periodic technical workshops.

7.5. Command Assistance Visits: During command assistance visits, reviews will be made to ensure that District Operations and Readiness activities comply with the provisions of this sub-plan and of District Operations and Readiness quality management plans.

7.6. Performance Indicators and Measures: MSCs and Headquarters have been developing a program to measure performance through specific indicators. The Performance Measurement Program will be added to the overall QA/QC process as it is finalized.

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## **Appendix G Programs Management Subplan**

### **1. Purpose**

This appendix establishes the process to assure the production of high quality Civil Works and Military documents and supplements the guidance provided in the basic South Pacific Division (CESPD) Quality Management Plan. This guidance establishes a framework of general policies and principles to achieve quality Programs Management services to meet or exceed customer requirements, and is consistent with Corps policies and regulations. The guidance includes:

Main Body of Appendix G	Quality Management of Programs Management products
Enclosure 1	Civil Works Program Management
Enclosure 2	Civil Works Program Development
Enclosure 3	Military Program Management

### **2. Applicability**

This appendix applies to all activities of the Civil Works and Military Programs Division in CESPD and Districts which are involved in the management of project and preparation, review, and approval of program management documents.

## **Enclosure 1**

### **Civil Works Program Management**

#### **1. Purpose**

This sub-plan establishes the quality management procedures in the Program Management Division in CESPD and its districts. It is intended to provide quality assurance and quality control guidance for program management products generated by the districts in the South Pacific Division (CESPD). The guidance establishes a framework of general policies and principles to assure that products are consistent with Corps policies and regulations.

#### **2. Applicability**

This appendix applies to all activities of the Civil Works Program Division, Directorate of Programs Management and CESPD Districts, which are involved in the management of projects and preparation, review, and approval of program management documents. The quality management process that is established in this appendix applies to program management documents, which are developed as part of the CESPD Civil Works program, includes the following:

- a. Project Cooperation Agreements (PCA)
- b. Design Agreements
- c. Project Management Plans (PMP)
- d. Memorandum of Agreements (MOA)
- e. Memorandum of Understandings (MOU)
- f. Feasibility Cost-Sharing Agreements (FCSA)

#### **3. References**

This appendix implements, or otherwise reflects, portions of the guidance presented in the following references:

- 3.1. ER 5-1-11, Program and Project Management Regulation, 27 Feb 1998
- 3.2. CESPL-PM, Office Memorandum 37-34-4, Financial Administration – Procedure for Processing Project Cooperation Agreement, 12 Jan 1996
- 3.3. CESP-PM, Office Memorandum 1165-2-131, Financial Administration – Project Cooperation Agreements, 10 Jan 1996
- 3.4. CESP-PM-C Memorandum, District Management Plan for Civil Works, Revised Section 11 – PCA Preparation and Quality, 7 Feb 1996
- 3.5. CECW-AG Memorandum, Model Agreement for Preconstruction Engineering and Design (PED), 3 Dec 1996.

3.6. CECW-B/CECW-A Memorandum, Agreements for Specifically Authorized Civil Works Projects and Separable Elements Involving Non-Federal Construction Work, Advances of Non-Federal Funds, or Contributions of Non-Federal Funds for Construction in the Absence of Federal Appropriations-Guidance Memorandum, May 1998

3.7. EC 1165-2-204, Processing Project Cooperation Agreements for Specifically Authorized Projects and Separable Elements, 31 July 1997.

3.8. ER 1165-2-124, Construction of Harbor and Inland Harbor Projects by Non-Federal Interest, 1 October 1990.

3.9. CECW-L/CECW-/CECW-P Memorandum, Integration of Project Cooperation Agreements (PCA's) and Supporting Project Documents, 17 March 1994.

3.10. ER 1165-2-204, Water Resource Policies and Authorities Processing Project Cooperation Agreements for Specifically Authorized Projects and Separable Elements, 31 July 1997.

3.11. CECW-ZA Memorandum, 24 March 1999, subject: Delegation of Authority for Post-Authorization Decision Documents.

3.12. CESPD-ET-P Memorandum, 20 April 1999, subject: Guidance for Post-Authorization Decision Documents

3.13. CESPD-PM-M, Signature Authority, 22 May 1998

#### **4. Definitions**

The definition of terms used in this appendix is generally consistent with the definitions provided in the mainbody of this Quality Management Plan. Within the text of this appendix, certain definitions are expanded upon to place them in a context that is appropriate for Civil Works program management.

#### **5. Relationship of the Division and District**

5.1. Division. The South Pacific Division, Program Management Division is responsible for quality assurance of Civil Works program management documents prepared by the districts. The Civil Works Program Management Division shall perform the quality assurance function for the documents mentioned in the above paragraph to assure proper adherence to guidance and policy.

5.2. Districts. Districts are responsible for controlling quality for all work that they accomplish. The districts shall develop and keep up to date their own quality management plans, to be consistent with this plan. The districts shall be responsible for the development and implementation of generic quality control plans for program management documents, which may be supplemented for products with unique issues.

## **6. Division Quality Assurance Responsibilities**

6.1. Chief, Civil Works Program Management Division. The Chief, Program Management Division is responsible for the following quality assurance activities:

6.2. Provide oversight of Civil Works program management.

6.3. Assure district quality control processes are followed for all products developed by the districts' Civil Works programs and project management organization.

6.4. Approve the portion of the districts' quality management plans that cover program management products.

6.5. Maintain interfaces with regional agencies to monitor customer satisfaction.

6.6. CESPD Program Manager. The CESPD program managers are assigned specific districts to oversee. The program managers are responsible for maintaining a viable and aggressive Civil Works program. The program managers are also responsible for managing the quality assurance program for the program management products developed by the districts. To fulfill these responsibilities the program managers roles include the following:

6.6.1. Provide informal consultation regarding program management policy issues.

6.6.2. Be an advocate of the districts' projects and programs.

6.6.3. Participate in formulating strategies for projects during project development.

6.6.4. Facilitate the resolution of policy and legal issues on program management documents with HQUSACE and others.

6.6.5. Participate in the districts' Project Review Board (PRB).

6.6.6. Participate in milestone conferences and other significant meetings with the district and HQUSACE.

6.6.7. Participate in the development and negotiation of the Project Cooperation Agreement with the non-Federal sponsor.

6.6.8. Lead the SPD District Support Teams in their effort to help execute studies and projects in the districts.

## **7. District Quality Control Responsibilities**

The project manager and the project team have the responsibility of achieving quality products and projects. The roles and responsibilities of all the participating individuals shall be described

in the districts' quality management plan. The development and quality management for all program management products shall follow the districts' quality control plan and shall exercise a limited independent review process.

#### 7.1. Product Review.

7.1.1. The quality control of PCAs, MOAs, MOUs, FCSAs and Design Agreements will follow the guidelines in this QMP and the districts' QMP which prescribes the procedures for assuring policy compliance as well as regulatory compliance.

#### 7.1.2. Project Management Plan.

7.1.2.1. The project team must develop the PMP but the ultimate responsibility for the PMP is with the project manager. Input from all the team members should be incorporated into the plan to accurately assess the cost and the time involved for completing the project. This input shall be essentially complete before review is undertaken and the branch and section chiefs shall be responsible for accuracy of their information.

7.1.2.2. The QCP for activities during the implementation phase of a product shall be embedded within the PMP.

7.1.2.3. For Civil Works projects, the timing of development, review and approval of PMPs is provided within existing HQUSACE and CESPD planning and program management guidance. For projects in the Continuing Authorities Program (CAP), the QCP requirements for the preparation of plans and specifications shall be embedded within a limited plan of action for the development of plans and specifications. This limited plan of action would be similar to a PMP but tailored to the size and complexity of products within this program.

7.1.3. Independent Review. Independent review of the PMP shall be limited to a single recognized expert in project management policies and procedures. This individual shall be selected from a list that would be included in the generic quality control plan and would normally be an experienced project manager who has not directly participated in the project. This independent review shall insure that the document reflects a coherent logic and that the assumptions, scopes, schedules and estimates are consistent, complete and reasonable. The reviewer will work with the project manager to resolve issues raised during the review and unresolved issues will be brought to the Deputy for Programs and Project Management (DPM) for resolution. The independent review of PCAs, MOAs, MOUs and Design Agreements shall include legal review as well as that from the single technical reviewer. The technical reviewer will assure all required signatures as well as the required components such as, comments and responses from the independent review, are submitted in the package for higher echelon review. This review will be in accordance with the references office memorandum in the references paragraph.

7.1.4. Final documentation. Proper documentation is a key component of an effective review process. Significant decisions must be recorded and the entire process must leave a clear audit trail. The documentation of the review shall be included in the project files, where it will be

subject to audit. The purpose of the review documentation is to show the full scope of the review and to assure action items are appropriately tracked to a resolution or request for policy decision. Documentation and resolution of issues is the final step prior to district certification.

7.2. District Certification. The DPM will sign a certification for the PMP that indicates that the independent review process has been completed and that all issues have been resolved, prior to the approval of the PMP by the district Project Review Board. The district certification is the guarantee that the quality of the product is of the standard expected of the district. The PCAs, MOAs, MOUs and Design Agreements shall include a legal certification as well as the certification of the DPM. The certifications will accompany the submittals of the products that are submitted to CESPD.

7.3. Role of the Project Manager: The project manager must be a strong advocate of a product/project for which he/she is also a member of the product delivery team. The project manager also will ensure that adequate time and resources are provided to perform the independent review all products. To ensure that quality expectations are met in accordance with Reference 3.1, above, the project manager will ensure that certification requirements are met prior to product/project approval by the District Commander or transmittal of a product to CESPD.

## **8. Quality Assurance Process**

Quality assurance by CESPD shall include the following:

8.1. Informal Consultation. A primary duty of the program manager is to consult with district counterparts on matters concerning technical and policy issues prior to submission of any documents to CESPD. Documents received in CESPD should not require extensive review because most issues and concerns should have been resolved during the product formulation stage.

8.2. Participation at the District PRB. As indicated above, participation by the CESPD program manager at the district PRB is a key component of the quality assurance process.

8.3. Review of Program Management Products. CESPD shall conduct quality assurance reviews of the quality control processes associated with program management products. These reviews are for the purpose of identifying systemic problems and possible improvements to the process and assure compliance with current policy.

## **9. Delegated Authorities**

In the referenced documents section of this subplan are the ERs and policy memorandums that govern the delegation of signature authority for PCAs, MOAs, MOUs and PED agreements. Generally, signature authority of PCAs are governed by HQUSACE or ASA(CW). Signature authority of PCAs are not delegated unless specifically requested by the district and approved by higher headquarters. For PCAs that do not deviate from the latest approved model, signature authority may be delegated to the district, but care will be taken for projects that are

not generally supported by the administration. In the case of MOAs and MOUs, the signature authority has been delegated to the district for routine memorandums. Controversial and high visibility memorandums should be coordinated with CESPD prior to execution. PMPs are to be approved by the districts' PRB.

## **Enclosure 2**

### **Civil Works Program Development**

#### **1. Purpose**

This appendix establishes the quality management procedures in the Program Development Division of the South Pacific Division and its districts. It is intended to provide quality assurance and quality control guidance for program development products generated by the districts in the South Pacific Division (CESPD). The guidance establishes a framework of general policies and principles to assure that products are consistent with Corps policies and regulations.

#### **2. Applicability**

This appendix applies to all activities of the Civil Works Program Development Division, Directorate of Programs Management and CESPD Districts which are involved in the management of studies and projects and preparation, review, and approval of program development documents. The quality management process that is established in this appendix applies to program development documents, which are developed as part of the CESPD Civil Works program, includes the following:

- Budget Justification Statements
- Testimony in Response to Congressional Hearings on Energy and Water Development Appropriations
- Congressional Members Facts Sheets
- Fact Sheets for Implementation of Work Added by Congress
- Budgetary Documents and Data for the 10-year Program
- Budgetary Documents and Data for the Capability Program
- South Pacific Division Project Data Sheets
- Other Miscellaneous Documents, Including Schedules of Obligations and
- Expenditures and Requests for Reprogramming of Funds

#### **3. References**

This appendix implements, or otherwise reflects, portions of the guidance presented in the following references:

- 3.1. Budget of the United States Government, Fiscal Year (Budget Year 2001)
- 3.2. Budget of the United States Government, Fiscal Year (Budget Year 2001) Analytical Perspectives
- 3.3. Corps of Engineers Civil Works Program Guidance (Annual EC; 11-2-179 for FY 2002)

3.4. PL 84-99	3.24. ER 11-1-320
3.5. PL 92-500	3.25. ER 11-2-220
3.6. PL 97-348	3.26. ER 11-2-240
3.7. PL 99-662	3.27. ER 11-2-290
3.8. PL 101-508	3.28. ER 25-1-2
3.9. PL 101-591	3.29. ER 37-2-10
3.10. PL 101-601	3.30. ER 1105-2-100
3.11. PL 102-580	3.31. ER 1110-1-8156
3.12. PL 103-62	3.32. ER 1110-2-100
3.13. EO 11514	3.33. ER 1110-2-1302
3.14. EO 12088	3.34. ER 1130-2-540
3.15. EO 12512	3.35. ER 1130-2-510
3.16. EO 12856	3.36. ER 1130-2-500
3.17. EO 12893	3.37. ER 1165-2-119
3.18. EO 12906	3.38. ER 1165-2-131
3.19. OMB Circular A-11	3.39. ER 1165-2-400
3.20. AR 11-2	3.40. EC 11-1-2
3.21. AR 385-10	3.41. EC 11-2-174
3.22. EM 1110-1-2909	3.42. EC 25-1-276
3.23. ER 5-1-11	

Titles for the listed references are in Table 1, which is on page G-13 of this Appendix.

#### **4. Definitions**

The definition of terms used in this appendix is generally consistent with the definitions provided in the mainbody of this Quality Management Plan. Within the text of this appendix,

certain definitions are expanded upon to place them in a context that is appropriate for Civil Works program development.

## **5. Relationship of the Division and District.**

5.1. Division. The South Pacific Division, Program Development Division is responsible for quality assurance of Civil Works program development documents prepared by the districts. The Civil Works Program Development Division shall perform the quality assurance function for the documents mentioned in the above paragraph to assure proper adherence to guidance and policy.

5.2. Districts. Districts are responsible for controlling quality for all work that they accomplish. The districts shall develop and keep up to date their own quality management plans, to be consistent with this plan. The districts shall be responsible for the development and implementation of generic quality control plans for program development documents, which may be supplemented for products with unique issues.

## **6. Division Quality Assurance Responsibilities**

6.1. Chief, Civil Works Program Development Division. The Chief, Program Development Division is responsible for the following quality assurance activities:

6.1.1. Provide oversight of Civil Works program development.

6.1.2. Assure district quality control processes are followed for all products developed by the districts' Civil Works program development organization.

6.1.3. Evaluate the portion of the districts' quality management plans that cover program development products.

6.1.4. Maintain interface with regional agencies regarding the CESPD Civil Works program.

6.2. CESPD Program Development Manager. The CESPD program development managers are assigned specific Civil Works Appropriation programs (General Investigations; Construction, General; and Operations and Maintenance, General) to oversee. The program managers are responsible for maintaining a viable and aggressive Civil Works program. The program managers are also responsible for managing the quality assurance program for the program development products developed by the districts. To fulfill these responsibilities the program development managers roles include the following:

6.2.1. Provide consultation regarding program development policy issues.

6.2.2. Be an advocate of the districts' studies and projects and overall Civil Works program.

6.2.3. Participate in formulating programming strategies for studies and projects for Civil Works program development.

6.2.4. Facilitate the resolution of policy and budget formulation issues on program development documents with HQUSACE and others.

6.2.5. Participate in the District Budget Conferences.

6.2.6. Participate in milestone conferences and other significant meetings with the district and HQUSACE.

6.2.7. Represent the Division Commander on program development issues at local sponsor and public forums such as regularly scheduled meetings of the California Water Commission and California Marine Affairs and Navigation Conference.

## **7. District Quality Control Responsibilities**

The program development offices and the project team have the responsibility of producing quality products. The roles and responsibilities of all the participating individuals shall be described in the districts' quality management plan. The development and quality management for all program development products shall follow the districts' quality control plan and shall exercise a limited independent review process.

### **7.1. Product Review.**

7.1.1. The quality control of Budget Justification Statements, Congressional Members Fact Sheets, Fact Sheets for Implementation of Work Added by Congress, Budgetary Documents and Data for the 10-year Program, and Budgetary Documents and Data for the Capability Program will follow the guidelines in this QMP and the districts QMP which prescribes the procedures for assuring policy compliance as well as requirements contained in listed references in paragraph 3.

### **7.1.2. Document Preparation.**

7.1.2.1. The Program Development Office and project delivery team must develop the budget documents, but the ultimate responsibility for the documents are with the Program Development Office and project manager. Input from all the team members should be incorporated into the preparation of the documents to accurately assess the cost, schedule and program requirements for completing a project. This input shall be essentially complete before review is undertaken and the branch and section chiefs shall be responsible for accuracy of their information.

7.1.2.2. For Civil Works studies and projects, the schedule for development, review and approval of budget documents is provided within issued HQUSACE and CESPD program development guidance.

7.1.3. Final Review. Final review of the budget documents shall be limited to recognized experts in program development policies and procedures. These individuals will be key staff members in the generic quality control plan and would normally be the Chief of the Program Development Office and other senior district staff. This review shall insure that the document reflects a coherent logic and that the assumptions, scopes, schedules and estimates are consistent, complete and reasonable. The reviewers will work with the project manager to resolve issues raised during the review and unresolved issues will be brought to the deputy for Programs and Project Management (DPM) for resolution.

7.1.4. Final documentation. Proper documentation is a key component of an effective review process. Significant decisions must be recorded and the entire process must leave a clear audit trail. The documentation of the review shall be included in the project files, where it will be subject to audit. The purpose of the review documentation is to show the full scope of the review and to assure action items are appropriately tracked to a resolution or request or policy decision. Documentation and resolution of issues is the final step prior to district certification.

7.2. District Certification. The DPM will sign Certifications of Compliance in accordance with requirements contained in the annual Program Development Guidance EC 11-2-179, including a Management Control Evaluation Checklist as well as Certifications contained in this Regulation, as appropriate. The district certification is the guarantee that the quality of the product is of the standard expected of the district. The Certifications will accompany the submittals of the products, where appropriate, that are submitted to CESPD.

7.3. Role of the Program Development Manager: The program development manager must be a strong proponent of the products used in the formulation, defense, and execution of the Civil Works program. The program development manager also will ensure that adequate time and resources are provided to perform the review of all products. To ensure that quality expectations are met above, the program development manager will ensure that certification requirements are met prior to transmittal of a product to CESPD.

## **8. Quality Assurance Process**

Quality assurance by CESPD shall include the following:

8.1. Ongoing Consultation. A primary duty of the program development manager is to consult with district counterparts on matters concerning program and policy issues prior to submission of any documents to CESPD. Documents received in CESPD should not require extensive review because most issues and concerns should have been resolved during the product formulation stage.

8.2. District PRB. Participation by the CESPD program manager at the district PRB is an important component of the quality assurance process, which keeps program development managers informed of schedule and cost changes as well as other project issues.

8.3. Review of Program Development Products. CESPD shall conduct quality assurance reviews of the quality control processes associated with program development products. These reviews are for the purpose of identifying systemic problems and possible improvements to the process and assure compliance with current policy.

**Table 1**  
**Reference Titles**

PL 84-99	Emergency Flood Control Funds
PL 92-500	The Federal Water Pollution Control Act Amendments of 1972
PL 97-348	Coastal Resources Barrier Act
PL 99-662	Water Resources Development Act of 1986
PL 101-508	Omnibus Budget Reconciliation Act of 1990
PL 101-591	Coastal Barrier Improvement Act of 1990
PL 101-601	Native American Grave Protection and Repatriation Act
PL 102-580	Water Resources Development Act of 1992
PL 103-62	Government Performance and Results Act of 1993
EO 11514	Protection and Enhancement of Environmental Quality
EO 12088	Federal Compliance with Pollution Control Standards
EO 12512	Federal Real Property Management
EO 12856	Federal Compliance with Right-To-Know Laws and Pollution Prevention Requirements
EO 12893	Principles for Federal Infrastructure Investments
EO 12906	Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure
OMB Cir A-11	Preparing and Submitting Budget Estimates
AR 11-2	Army Programs Management Control
AR 385-10	Army Safety Program
EM 1110-1-2909	Engineering and Design – Geospatial Data and Systems
ER 5-1-11	Program and Project Management
ER 11-1-320	Civil Works Emergency Management Programs
ER 11-2-220	Civil Works Activities, General Investigations
ER 11-2-240	Civil Works Activities, Construction
ER 11-2-290	Civil Works Activities, General Expenses
ER 25-1-2	Life Cycle Management of Automated Information Systems (AIS)
ER 37-2-10	Accounting and Reporting Civil Works Activities
ER 1105-2-100	Guidance for Conducting Civil Works Planning Studies
ER 1110-1-8156	Engineering and Design – Policies, Guidance, and Requirements for

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**Table 1**  
**Reference Titles**

	Geospatial Data Systems
ER 1110-2-100	Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures
ER 1110-2-1302	Civil Works Cost Engineering
ER 1130-2-540	Environmental Stewardship, Operations and Maintenance Policies
ER 1130-2-510	Hydroelectric Power Operations and Maintenance Policies
ER 1130-2-500	Partners and Support (Work Management Policies)
ER 1165-2-119	Modifications to Completed Projects
ER 1165-2-131	Local Cooperation Agreements for New Start Construction Projects
ER 1165-2-400	Recreation Planning, Development and Management Policies
EC 11-1-2	Army Programs – USACE Manpower – Corp of Engineers Manpower Requirements Systems (RCS: CERM-M-2)
EC 11-2-174	Army Programs – Availability, Obligation and Use of General Expenses and Other Civil Funds in Fiscal Year 1998

## **Enclosure 3**

### **Military Program Management**

#### **1. Purpose**

This appendix establishes the quality management procedures in the Directorate of Program Management in CESPD and its districts. It is intended to provide quality assurance and quality control guidance for program management products generated by the districts in the South Pacific Division (CESPD). The guidance establishes a framework of general policies and principles to assure that products are consistent with Corps policies and regulations.

#### **2. Applicability**

This appendix applies to all Military Construction (MILCON) activities of the Directorate of Programs Management and CESPD Districts which are involved in the management of projects and preparation, review, and approval of program management documents, particularly project management plans (PMP's).

#### **3. References**

The following regulations/document contain references pertaining to the management of MILCON projects. These referenced documents need to be considered when developing a PMP.

3.1. AR 415-15 Army Military Construction Program Development and Execution, dated 4 Sep 1998.

3.2. DAIM-FD/CEMP-MA memorandum dated 20 Jan 00, subject: Revised Guidance for Procedures and Approval of Changes in MILCON Projects Funded by MCA, UMMCA and AFH Appropriations.

3.3. AR 415-1-16 Construction Fiscal Management, dated 30 September 1993

3.4. AR 415-4-41 Work Authorization and Funds for Air Force Military Construction dated 31 March 1993.

3.5. CEMP-MD/CEMP-EE memorandum dated 14 October 1998 Subject: Post-Award Engineering Services an USACE Policy on Post Award Engineering Services for Military Projects.

3.6. ER 5-1-11, Program and Project Management Regulation

#### **4. Relationship of the Division and District**

4.1. Division. The South Pacific Division, Military Programs District Support Team is responsible for quality assurance of Military program management documents prepared by the districts. The Military Programs District Support Team shall perform the quality assurance function for the documents mentioned in the above paragraph to assure proper adherence to guidance and policy.

4.2. Districts. Districts are responsible for controlling quality for all work that they accomplish. The districts shall develop and keep up to date their own quality management plans, to be consistent with this plan. The districts shall be responsible for the development and implementation of generic quality control plans for program management documents, which may be supplemented for products with unique issues.

#### **5. Division Quality Assurance Responsibilities**

5.1. Military Programs District Support Team. The Military Programs District Support Team is responsible for the following quality assurance activities:

5.1.1. Provide oversight of SPD Military Programs management.

5.1.2. Assure district quality control processes are followed for all products developed by the districts.

5.1.3. Approve the portion of each districts quality management plan that cover program management products.

5.1.4. Maintain interfaces with major commands or other appropriate organizations to monitor customer satisfaction.

5.2. CESPD Program Manager. The CESPD program managers are assigned specific districts or programs to oversee. The program managers are responsible for maintaining a viable and aggressive geographic or functional program. The program managers are also responsible for managing the quality assurance program for the program management products developed by their districts or functional program. To fulfill these responsibilities the program managers roles include the following:

5.2.1. Provide informal consultation regarding program management policy issues.

5.2.2. Be an advocate for district projects and programs.

5.2.3. Participate in formulating strategies for projects during project development.

5.2.4. Facilitate the resolution of policy and legal issues on program management documents with HQUSACE and others.

5.2.5. Participate in the district Project Review Boards (PRB).

5.2.6. Participate in milestone conferences and other significant meetings with the district and HQUSACE.

## **6. District Quality Control Responsibilities**

The project manager and the project team have the responsibility of achieving quality products and projects. The roles and responsibilities of all the participating individuals shall be described in the district quality management plan. The development and quality management for all program management products shall follow the district quality control plan, and the district shall exercise a limited independent review process.

### **6.1. Product Review.**

6.1.1. Project Management Plan. The project team must develop the PMP but the ultimate responsibility for the PMP is with the project manager. Input from all the team members should be incorporated into the plan to accurately assess the cost and the time involved for completing the project. This input shall be essentially complete before review is undertaken and the branch and section chiefs shall be responsible for accuracy of their information.

6.1.2. Independent Review. Independent review of the PMP shall be limited to a single recognized expert in project management policies and procedures. This individual shall be selected from a list that would be included in the generic quality control plan and would normally be an experienced project manager who has not directly participated in the project. This independent review shall insure that the document reflects a coherent logic and that the assumptions, scopes, schedules and estimates are consistent, complete and reasonable. The reviewer will work with the project manager to resolve issues raised during the review and unresolved issues will be brought to the Deputy for Programs and Project Management (DPM) for resolution.

6.1.3. Final documentation. Proper documentation is a key component of an effective review process. Significant decisions must be recorded and the entire process must leave a clear audit trail. The documentation of the review shall be included in the project files, where it will be subject to audit. The purpose of the review documentation is to show the full scope of the review and to assure action items are appropriately tracked to a resolution or request for policy decision. Documentation and resolution of issues is the final step prior to district certification.

6.2. District Certification. The DPM will sign a certification for the PMP that indicates that the independent review process has been completed and that all issues have been resolved, prior to the approval of the PMP by the district Project Review Board. The district certification is the guarantee that the quality of the product is of the standard expected of the district. The certifications will be made available to the Military Program District Support Team during Command Inspection Visits.

6.3. Role of the Project Manager: The project manager must be a strong advocate of a product/project for which he/she is also a member of the product delivery team. The project manager also will ensure that adequate time and resources are provided to perform the independent review of all products. To ensure that quality expectations are met in accordance with Reference 2.f, above, the project manager will ensure that certification requirements are met prior to product/project approval by the District Commander.

## **7. Quality Assurance Process**

Quality assurance by CESPD shall include the following:

7.1. Informal Consultation. A primary duty of the program manager is to consult with district counterparts on matters concerning technical and policy issues which may affect development, modification or use of Project Management Plans. PMP's should not require extensive review because most issues and concerns should have been resolved during the development stage.

7.2. Participation at the District PRB. As indicated above, participation by the CESPD program manager at the district PRB is a key component of the quality assurance process.

7.3. Review of Program Management Products. CESPD shall conduct quality assurance reviews of the quality control processes associated with program management products. These reviews are for the purpose of identifying systemic problems and possible improvements to the process and assure compliance with current policy.

## Appendix H Model Quality Control Certification

### MODEL DISTRICT ENGINEER'S QUALITY CONTROL CERTIFICATION (Products Developed by Inhouse Forces)

#### COMPLETION OF QUALITY CONTROL ACTIVITIES

The District has completed the (state level of study or product development) of (Project Name and Location) . Certification is hereby given that all quality control activities defined in the Quality Control Plan appropriate to the level of risk and complexity inherent in the product have been completed. Documentation of the quality control process is enclosed.

#### GENERAL FINDINGS

Compliance with clearly established policy principles and procedures, utilizing clearly justified and valid assumptions, has been verified. This includes assumptions; methods, procedures and materials used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and the reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The undersigned recommends certification of the quality control process for this product.

\_\_\_\_\_  
(Signature)  
Chief, Responsible Functional Element

\_\_\_\_\_  
(Date)

#### QUALITY CONTROL CERTIFICATION

As noted above, all issues and concerns resulting from technical review of the product have been resolved. The project may proceed to the (indicate next phase of product development) .

\_\_\_\_\_  
(Signature)  
District Commander

\_\_\_\_\_  
(Date)

CESPD R1110-1-8  
App H  
26 May 2000

**CERTIFICATION OF LEGAL REVIEW\***

The report for indicate name of study/project, including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, indicate name of district and is approved as legally sufficient.

\_\_\_\_\_  
(Signature)  
District Counsel

\_\_\_\_\_  
(Date)

\* This portion of the certification may be required for civil works related products per EC 1165-2-203.

**MODEL**  
**CONTRACTOR STATEMENT OF QUALITY CONTROL**  
(For Products Developed by A-Es or Other Government Contractor)

**COMPLETION OF QUALITY CONTROL**

The (A-E) (other Government contractor) has completed the (type of study) of (project name and location). Notice is hereby given that all quality control activities, appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan have been completed. Compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. Documentation of the quality control process is enclosed. The undersigned recommends certification of the quality control process for this product.

_____ (Signature) <i>Independent Technical Review Team Leader</i>	_____ (Date)
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**CERTIFICATION OF QUALITY CONTROL**

Significant concerns and the explanation of their resolution are as follows:  
(Describe the major technical concerns, possible impact, and resolution)  
As noted above, all concerns resulting from the independent technical review of the project have been considered.

_____ (Signature) (Principal w/ A-E firm or Engineer of Record with Gov Ctr)	_____ (Date)
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**MODEL**  
**STATEMENT OF QUALITY ASSURANCE**

(To be used by the District to certify that an A-E or other Government contractor has completed the design and/or ITR and that the District has completed QA)

**COMPLETION OF QUALITY ASSURANCE REVIEW**

The (A-E) (other Government contractor) has completed the (type of study) of (project name and location). Notice is hereby given that all quality control activities, appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan have been completed. Compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The study/design was accomplished by (design agent's name) and the independent technical review was accomplished by (review agent's name). Their quality control certification is attached. The District has completed a quality assurance review and the subject project is in compliance with the contract requirements. The undersigned recommends certification of the quality assurance process for this product.

\_\_\_\_\_  
(Signature)  
Responsible Function Chief

\_\_\_\_\_  
(Date)

**CERTIFICATION OF QUALITY CONTROL  
And QUALITY ASSURANCE REVIEW**

Significant concerns and the explanation of the resolution are as follows:

(Describe the major technical concerns, possible impact, and resolution)

As noted above, all concerns resulting from independent technical review of the project have been considered.

\_\_\_\_\_  
(Signature)  
District Commander

\_\_\_\_\_  
(Date)